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**Posterior Lubrication in A Patient Urinary retention et causa Suspect
Urethral Stones**

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Abstract

Urinary tract stones (urolithiasis) are the most common disease in urology. In developing countries like Indonesia, the urolithiasis rate continues to increase. Urethral stones are rare cases; the incidence is less than 1% of all cases of urinary tract stones. Urethral stones are one of the causes of acute urinary retention. Urinary retention is an emergency in the field of urology and cases are often encountered in the emergency department that requires immediate action. The management of all types of retention aims to decompress the bladder and reduce the cause of retention by inserting a catheter. This paper discusses cases of urinary retention and causes of urethral stones that have failed to be implanted with a catheter so that posterior lubrication is performed.

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Introduction

Urethral stones are rare cases, the incidence is less than 1% of all cases of urinary tract stones.¹ Urethral stone may arise de novo from proximal urethral obstruction or within a diverticulum, often associated with a history of previous urethral surgery, recurrent urinary tract infections, and prolonged static body position.² In addition, urethral stones often originate from the urinary bladder or upper urinary tract, generally found in both the anterior and posterior urethra which manifest clinically as acute urinary retention.³

Urinary retention is an emergency in the field of urology and is often encountered in the emergency department. Acute urinary retention presents as a sudden inability to void and is usually accompanied by lower abdominal pain.⁴ Patients come with complaints of being unable to urinate even though the bladder is full of urine, accompanied by suprapubic pain due to bladder distention. This state of acute urinary retention is very painful and requires immediate relief. The management of all types of retention aims to decompress the bladder and reduce the cause of the retention. At level-one health facilities, catheter insertion, and cystostomy can be

performed, or if it fails, an ultrasound or urethrography examination can be performed.⁵

Urethral stones are one of the causes of acute urinary retention. The management of urethral stones varies from invasive (open) to less invasive (percutaneous) approaches. The newly proposed method is lubrication with 2% Xylocaine jelly followed by spontaneous expulsion.⁶ This paper discusses cases of urinary retention et causa suspect urethral stones which had failed to be implanted with a catheter so that posterior lubrication was performed.

Case Description

A 60-year-old man came with complaints of being unable to urinate (micturition) for 3 days before entering the hospital. The patient feels pain. The patient said that every micturition had to push first, initially micturition only dripped a little but today micturition didn't come out at all. The patient says that every micturition feels hot, and painful the stream of urine is weak, intermittent, and often dripping. Patients often feel dissatisfied after urinating like there are still leftovers.

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Complaints like this are felt for the first time. Other complaints such as fever, nausea, vomiting, abdominal pain, bleeding during urination, and lumps in the genital area were denied. From a history of previous illnesses, the patient often complained of dysuria since about 1 month ago. The patient had no history of allergies, history of high blood pressure, diabetes, malignancy, or previous history of urinary tract stones. From his family history, the patient admitted that he had no history of high blood pressure, diabetes, malignancy, or history of BPH.

Social history, the patient works as a tofu seller daily. Lives at home with his wife, children, son-in-law, and grandchild. Living in a densely populated village house. The patient is an active smoker since the age of 20 years and smokes 1 day after 1 pack of cigarettes.

The history of treatment for this complaint, the patient has never taken medication or taken herbal medicine or traditional medicine at all. Before going to the hospital, the patient came to the primary health care and to the clinic, where a catheter was tried there but failed, the catheter was obstructed.

Physical examination showed that the patient was in pain, conscious with GCS 456, blood pressure 110/80 mmHg, respiratory rate 20 times/minute, pulse 88 times/minute with a strong and regular beat, and body temperature 36.8 degrees Celsius. Examination of the head, neck, thorax and extremities was within normal limits.

On abdominal examination, the suprapubic region was distended, and there was tenderness in the suprapubic region with the impression of a full bladder. Percussion of the timpani abdomen, auscultation found normal positive bowel sounds. There was no edema or deformity in the upper and lower extremities. All 4 extremities appears to be warm, dry, and red; and CRT < 2 seconds.

Examination of the urological status, on inspection of the suprapubic region, appeared distended, with the impression of a full bladder, no hematoma or mass was seen. Palpation of the suprapubic region revealed positive tenderness, the bladder was filled, and there were no masses. Digital rectal examination found the anal sphincter to grip.

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Discussion

Among all cases of urinary tract stones, urethral stones are rare cases. Its prevalence is high in developing countries, where men are more commonly affected because of the longer male urethral anatomy, although some cases occur in women and children.⁷ In this case, the reported patient is an old man.

The anatomical structure of the male urethra is divided into 2, namely the anterior urethra and the posterior urethra. The anterior urethra can be divided into meatal, penile, bulbar, and penobulbar sections. While the posterior urethra can be divided into the membranous, prostatic, and bladder neck. (**Figure 2**) The diameter of the male urethra is approximately 10 mm. Theoretically; a normal urethral lumen allows small stones to travel naturally through this dimension.⁸

If there is a pathological condition that causes a narrowing of the diameter of the urethra in any part, it can cause the formation of stones in the urethra. It can also block the passage of stones from the rest of the urinary system, causing them to build up and increase in stone size. Koga et al. in his study said that of 56 patients, the incidence of stones in the upper urinary

tract with urethral stones was 32%. In another study, Kiciler et al found a 47.1% similarity.⁹

Urethral stones can be primary urethral stones or secondary urethral stones. Primary stones are stones that form de novo in the urethra. Primary urethral stones are associated with abnormalities such as urethral stricture, foreign body in the urethra, or urethral diverticula. Secondary stones, also known as migratory stones, are formed in the bladder or kidney and then move down to the urethra. Primary stones rarely cause acute symptoms, while secondary stones can cause dysuria, urinary retention, straining during urination, or even sepsis.¹⁰ In this patient there were symptoms of urinary retention but there was no previous history of stones. This is different from previous research. Jung et al reported that out of 221 patients, 63% of patients had urethral stones together with upper urinary tract stones together. Takasaki et al. examined a total of 300 patients, 57.9% of patients had urethral stones together with upper urinary tract stones together.¹¹

Although these stones can form in any part of the urethra, they are most common in the posterior urethra and the most common

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type of stone is calcium oxalate. In males, the stones were most frequently located in the penile/bulbar urethra (53.8%), and the posterior urethra (28.2%), with the minority being in the navicular fossa (10.3%). (Morton). Research on urethral stone analysis by Morton et al showed that struvite stones (48.4%) were most common, followed by calcium phosphate (45.2%) and calcium oxalate (32.3%).¹²

Epidemiological studies show that the geographic distribution and chemical composition of urolithiasis is influenced by several factors including racial distribution, socioeconomic status, hygiene, and dietary factors including protein intake. Upper urinary tract stones are more commonly composed of calcium oxalate and phosphate and are more common in economically developed countries, whereas lower urinary tract stones consisting of calcium oxalate, urate, and ammonium are widespread throughout Asia. This is consistent with the current findings, which found cases of urethral stones to be most common in Asia (67%), with few reports from Europe (12%) and North America (6%).¹³

In this case, the patient complained of an inability to urinate and a full bladder. Men

with urethral stones may have different clinical manifestations, such as lower urinary tract symptoms: acute urinary retention, hematuria, difficulty urinating, frequent urination, or other symptoms such as a palpable urethral mass, penile pain, and pain in the rectal area. or perineum, urinary tract infection, and sepsis. The clinical manifestations are based on stone size, localization, patient's urethral anatomy, and time of onset of symptoms. While posterior urethral stones usually cause pain in the perineal area, stones in the anterior area usually cause pain in the penile area. Stones that reach large sizes usually cause acute urinary retention.¹⁴

Obstruction of the urethra by stones is often caused by the displacement of stones in the upper urinary tract, namely bladder stones, ureteral stones, or kidney stones. Kidney or ureteral stones that can descend spontaneously into the bladder usually will freely block the urethra. Stones that migrate from the bladder are usually solitary. Meanwhile, small stones (<1 cm in diameter) can sometimes come out spontaneously but can cause acute lower urinary tract complaints due to sudden impaction, which can be irritative or obstructive complaints.¹⁴

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Obstructive complaints in the form of acute urinary retention are the most common main complaints, other obstructive complaints are in the form of a weak stream of urine or dripping urine. Irritative complaints can be in the form of stranguria, macrohematuria, and dysuria. Kamal et al reported of 51 male patients with urethral stones, 78% of them complained of acute urinary retention. While Amin et al reported this incident as much as 89%. The next most common complaint is dysuria, which is complained of by 33% - 64.7% of all cases. Other results from Morton's study reported that the most common clinical manifestations were palpable urethral masses (57.9%), urethral stones palpable on physical examination, and palpable hard masses along the male urethra. You can also feel a hard mass in the scrotum which is an indication of a urethral stone. Patients presenting with a palpable urethral mass usually have an underlying urethral pathology or a stone located in the penile or bulbar urethra.¹²

The International Continence Society defines acute urinary retention as, "a painful and palpable bladder or when the patient is unable to urinate." It is therefore expected that the majority of patients with urinary retention will describe suprapubic

or lower abdominal pain and associated difficulty voiding spontaneously. A history of previous retention or other lower urinary tract symptoms such as straining, terminal dribbling, or nocturia may help identify patients at risk for painless retention. Physical examination may reveal suprapubic distension and dull percussion. In the urological literature, a bladder volume greater than 300 mL is often cited as the minimum value required to identify a distended bladder on examination in a non-obese patient.¹⁵

This patient has a stone appearance on plain radiographs. In cases of urethral stones, plain radiographs are usually sufficient to confirm the diagnosis, as they may show radio-opaque stones in 98.3% of cases. However, in some reports the diagnosis of urethral stones is radio-opaque in only 43% of cases, attributed to inadequate imaging techniques that do not extend caudally enough to include the urethra or a different composition of the calculus. Furthermore, ultrasound became the common imaging investigation performed in 32.6% of cases, useful if radiolucent stones were detected. ultrasonography (USG) of the penis or retrograde urethrogram (RUG). The advantages of ultrasound are that it is painless during the examination and can

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also depict abnormalities along the urethral canal, such as a stricture or diverticulum. On Ultrasound, stones are shown with hyperechoic images accompanied by acoustic shadows. On RUG examination, a filling defect will be seen indicating obstruction by a urethral stone. CT scanning is not an ideal modality for screening for urethral stones because it may not identify an affected urethral stone.^{12,14}

The patient underwent catheter insertion but failed and then posterior lubrication was performed. The management of urethral stones depends on the size of the stone, its location, and whether there is associated urethral pathology. Decompression of a bladder full of urine should be done immediately with a urethral catheter. If it fails, the next course of action is a suprapubic puncture and suprapubic catheter before being referred or getting definitive treatment. The next treatment is to treat pain caused by stones in the urethra.¹⁴

Stones in the posterior urethra are pushed back into the bladder for further operative management. Urethral stone pushing is done with the installation of a urethral catheter. This method can fail because it is complicated by spasms of the external

urethra or periurethral muscles around the stone because of the pain of rubbing the stone. This can be prevented by administering xylocaine jelly. In anterior urethral stones, pushing the stone back into the bladder is difficult to succeed, so it should not be done. Extraction of the stone by “milking” can be successful if the surface of the stone is flat. The risk of urethral injury must be considered, especially with large, sharp, irregular stones; on these stones, this method is not recommended. Administration of lidocaine jelly facilitates the expulsion of anterior urethral stones.¹⁶

Spontaneous expulsion of stones from the external urethral orifice can use physical manipulation with intraurethral 2% lidocaine gel, a management method that can be performed under local anesthesia with small stones measuring 10 mm located in the anterior urethra.¹⁶

Simple measures such as lubrication with 2% Xylocaine jelly followed by extraction or spontaneous expulsion are effective in most cases of early impaction, Xylocaine 2% is a local anesthetic as well as a lubricant, so it is very effective in reducing pain and spasms. It is most effective on initial impaction within 72 hours. This

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modality is safe without minimum acceptable morbidity and mortality comparable to modern techniques, especially in developing countries where modern facilities are not available. In this patient, posterior lubrication has been successfully performed. In a study by El-Sherif and El-Hafi, 18 patients with urethral stones less than 10 mm, without urethral stricture and previous urethral surgery were examined. In that study, the success rate of intraurethral application of 2% lidocaine gel was reported to be 77.8%.¹⁷

Another treatment modality that can be applied under local anesthesia is the endoscopic removal of urethral stones with forceps. However, using this method can be risky in repairing the urethral mucosa in patients so it is not recommended. Meatotomy or urethroplasty is recommended in cases of navicular fossa and urethral meatus, especially for stones that reach large sizes or have an impacted lumen.¹⁴

In the treatment of posterior urethral stones, the therapeutic modalities that are mostly used by urologists are endoscopy into the bladder and fragmentation with electrohydraulic, ultrasound, or laser lithotripsy. Using the endoscopic method is

preferable when advancing a posterior urethral stone into the bladder. Thus, before urethral stones enter the bladder, predisposing factors for stone formation such as urethral strictures can be handled effectively and correctly.¹² Posterior urethral stones that are not affected or associated with urethral obstruction can be pushed back into the bladder by retrograde manipulation and subsequent intravesical fragmentation or suprapubic extraction. Alternatively, urethral stones may be removed endoscopically or fragmented in situ by lithotripsy or holmium lasertripsy. Kamal et al. reported that in the management of all cases of posterior urethral stones, the procedure for fragmentation of advanced stones into the bladder through the endoscope method had a success rate of 86%. In situ lithotripsy is performed on residual urethral stones that cannot be pushed back into the bladder and have a success rate of 80%.¹⁷

Although these non-operative and minimally invasive endoscopic methods are preferred, open surgical modalities such as nephrolithotomy, urethroplasty, or cystolithotomy are still indicated for cases of large and impacted stones, or those with associated pathology (diverticula, strictures, and urethrocutaneous fistulas)

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that require treatment. simultaneous. Given the progress of endourology methods comparable to technological developments in the medical world, open surgical procedures should be considered as the last treatment option in the treatment of urethral stones.¹⁶

In urological practice, lasers are used to treat diseases such as benign prostatic hyperplasia, urethral strictures, urinary stone disease, skin lesions, obstructed ureteropelvic union, and urogenital malignancies. It is indicated as an effective and safe treatment method in the treatment of ureteral and intrarenal stones. However, there is very little research related to the use of lasers on urethral stones. Published literature on urethral stones is very limited and no detailed information on treatment algorithms is available on other urinary system stone diseases.¹⁷

Conclusion

We have reported a case of urinary retention and urethral stones. A 60-year-old man came with complaints of being unable to urinate (micturition) for 3 days before entering the hospital. The patient feels pain. Complaints like this are felt for the first time. previously the patient often complained of dysuria since about 1 month

ago. The patient had no history of high blood pressure, diabetes, malignancy, or history of urinary tract stones. Before going to the hospital, the patient came to the primary health care and to the clinic, where a catheter was tried there but failed, the catheter was obstructed.

Physical examination showed the patient appeared to be in pain. Examination of urological status and inspection of the suprapubic region looked distended, full VU impression, and no hematoma or mass was seen. Palpation of the suprapubic region revealed positive tenderness. This patient was diagnosed with urinary retention due to urethral stones

While in the emergency room, a suprapubic puncture was performed so that urine could come out. Next, the catheter was placed, preceded by posterior lubrication. Next, the catheter was placed, preceded by posterior lubrication. This action intends to push the stone in the posterior urethra back to the bladder for further operative management. After inserting the catheter, an x-ray of the pelvis was taken on the patient and a radiopaque image was obtained, suggesting that the stone had returned to the bladder.

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Figure 1. BOF after doing posterior lubrication.

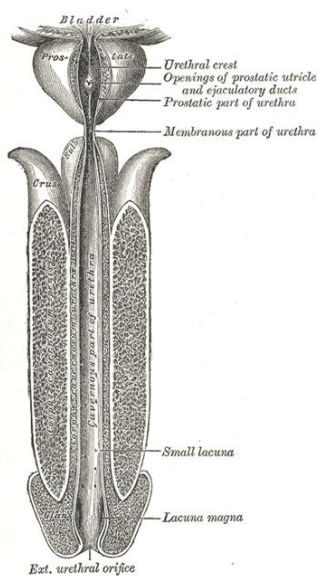


Figure 2. The anatomical structure of the male urethra.