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Case Report

The tale of twice left behind: laparoscopic excision of symptomatic dual ureteric stumps

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ABSTRACT

Ureteric stump syndrome is a rare complication post-nephrectomy characterized by persistent urinary symptoms, often secondary to reflux or infection of the residual ureteric tissue. The presence of dual symptomatic ureteric stumps is an extraordinarily rare phenomenon. We report a case of successful laparoscopic management of dual refluxing ureteric stumps in an adult female with complex urogenital anatomy, including an ectopic ureter. A 31-year-old woman with a history of left ureteric reimplantation for an ectopic ureter opening into the bladder neck and vagina underwent laparoscopic nephrectomy for a poorly functioning kidney. She developed recurrent urinary tract infections (UTIs) and persistent symptoms despite nephrectomy. Imaging revealed dilated ureteric stump on non-contrast computed tomography (CT). During laparoscopic surgery, two dilated ureteric stumps were identified and excised completely. Postoperative recovery was uneventful with complete symptom resolution. This case highlights the diagnostic and surgical challenges posed by dual ureteric stumps and supports laparoscopic completion ureterectomy as a safe and effective treatment for refractory ureteric stump syndrome.

Keywords: Ureteric stump syndrome, Ectopic ureter, Laparoscopic surgery

INTRODUCTION

Ureteric stump syndrome (USS) is a recognized, albeit uncommon, complication following nephrectomy where residual ureteric tissue remains refluxing or infected, leading to recurrent urinary symptoms such as infections, flank pain, or hematuria.[1] The incidence varies in literature, reported between 0.8-1% with most cases described in pediatric populations due to congenital anomalies.[1] In adults, this syndrome is less frequently documented and often presents diagnostic and therapeutic challenges given the complexity of prior surgeries and altered anatomy.

An ectopic ureter refers to a single or duplicated ureter that drains into a location outside the normal anatomical boundaries of the urinary bladder trigone. This abnormal ureteral opening is a rare congenital defect arising from disturbances during fetal development. Ectopic ureters occur more frequently in females, with a female-to-male ratio ranging from 2 to 6:1. In girls, the most common sites of ureteral ectopy are the urethra, urethral septum, and vaginal vestibule, whereas in boys, they typically open into the posterior urethra, seminal vesicle, prostatic urethra, or ejaculatory duct.[2] Our patient's left ectopic ureter had an opening into either the bladder neck and vagina, for which she underwent ureteric reimplantation. Persistent renal damage led to subsequent laparoscopic nephrectomy for a poorly functioning kidney, but symptoms of recurrent urinary tract infections continued postoperatively.

Although imaging options like contrast computed tomography (CT), magnetic resonance imaging (MRI), or nuclear scans are traditionally employed, in this case, evaluation was limited to non-contrast CT (NCCT) for symptom workup as dual ureters were visualized on NCCT. Intraoperative findings revealed the presence of two dilated tortuous ureters on the left side: a native ureter and a separate stump likely missed in previous surgeries. This dual symptomatic ureteric stump occurrence is

exceptionally rare, previously described scarcely in literature. We describe the laparoscopic excision and successful outcome of this unusual entity.

CASE REPORT

A 31-year-old female, with no chronic medical comorbidities or addictions, initially presented with chronic lower abdominal pain and dysuria. Clinical history revealed recurring urinary symptoms from 2017 onwards. Initial investigations confirmed an ectopic left ureter with an unusual insertion into either the bladder neck and vaginal wall. She underwent a ureteric reimplantation procedure aiming to correct the ectopic insertion and preserve renal function.

Despite surgical correction, serial renal scans showed progressive decline in left renal function, with a GFR declining to 6.6 ml/min by 2021. The decision was made to proceed with left laparoscopic nephrectomy due to poor function and recurrent symptoms. Postoperatively, she reported recurrent urinary tract infections with copious white Per vaginal discharge with culture-proven E. coli sensitive to commonly used antibiotics including penicillin and nitrofurantoin.

A VCUG demonstrated a refluxing dilated left ureteric stump due to persistent symptoms revealed a markedly dilated tortuous left ureteric stump extending close to the bladder neck region. Given persistent recurrent infections and clinical symptoms, laparoscopic excision of the native ureter and completion left ureterectomy was scheduled.

Under general anesthesia, the patient was placed in right lateral decubitus. Pneumoperitoneum was induced at Palmer's point due to previous surgeries, 12 mm camera port placed 2 cm lateral and inferior to umbilicus. Another 12 mm working port placed in mid clavicular line in triangulation to the camera port caudally and another 5 mm cranially to allow optimal visualization and instrument maneuverability (Figure 2). The left colon was mobilized medially along the line of Toldt exposing retroperitoneum. Intraoperatively, two dilated ureteric structures were identified on the left side: one was the native ureter entering the bladder neck identified by the catheter placed post induction, and the other a second ureteric stump bearing a surgical clip consistent with prior reimplantation surgery.

The native ureter was meticulously dissected medially to the medial umbilical ligament, opened longitudinally near its insertion, and marsupialized with barbed V-Loc sutures to prevent further urinary stasis. The second ureteric stump was traced proximally to its previous site of implantation, carefully dissected free of surrounding tissues, and completely excised.

An intravesical methylene blue leak test was performed after bladder filling and showed no evidence of extravasation, confirming mucosal and bladder integrity.

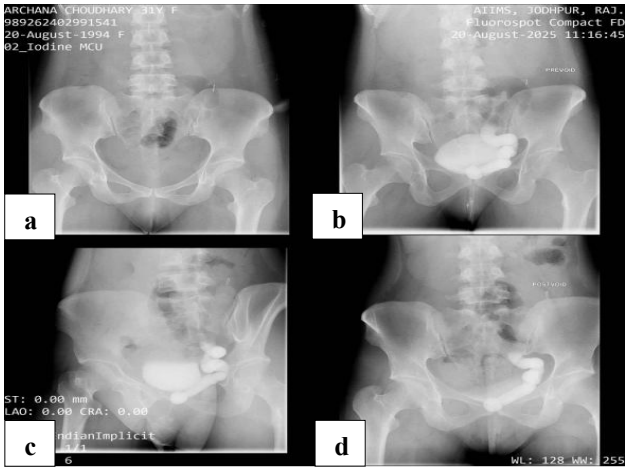

Figure 1: Voiding cystourethrogram (VCUG) demonstrating a refluxing dilated left ureteric stump, (a) pre-void film showing baseline pelvic anatomy, (b) filling phase revealing contrast opacification of a dilated tortuous left ureteric stump arising from the bladder neck, (c) voiding phase with persistent reflux and irregular contrast-filled ureteric remnant, and (d) post-void film demonstrating retained contrast within the ureteric stump, consistent with ureteric stump syndrome.

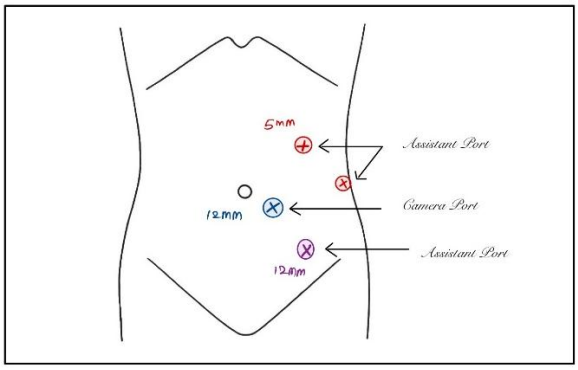

Figure 2: Port placement for laparoscopic completion ureterectomy showing a 12-mm camera port and 3 assistant ports (12-mm caudal and 5-mm cranial) arranged in triangulation.

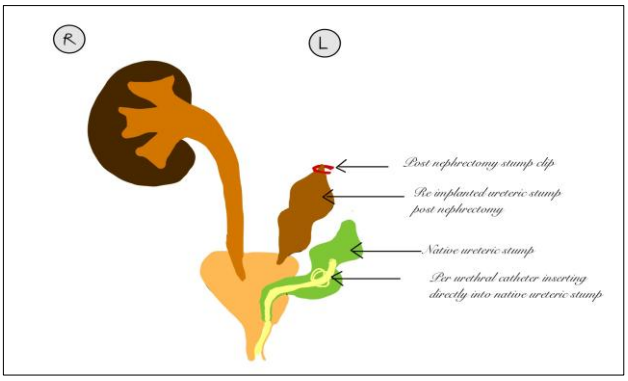

Figure 3: Diagrammatic intra-operative representation of dual left ureteric stumps.

Both ureteric specimens were placed in an endoscopic retrieval bag and removed by extending the 12 mm port incision. Fascial closure was performed with absorbable sutures, and the skin was closed using staples. A drain was placed in the left paracolic gutter.

Postoperative recovery was unremarkable. At follow-up visits, the patient reported complete resolution of symptoms without further infections or lower abdominal pain. Repeat urine cultures were sterile.

DISCUSSION

The ureteric stump syndrome represents persistence of a refluxing or infected ureteric remnant that was incompletely excised during nephrectomy. This remnant can serve as a nidus for recurrent infections or even stone formation. Dual symptomatic ureteric stumps, as in this patient, are exceedingly rare and are likely associated with complex congenital anomalies such as ectopic ureters with bifid or duplicated systems or incomplete surgical excision.[2]

Ectopic ureters with abnormal insertions into the bladder neck and vaginal wall are rare congenital anomalies adding complexity to surgical management which was the actual dilemma in our case. Our patient's history of ectopic ureteric reimplantation, followed by nephrectomy for chronic renal damage, created a challenging surgical field prone to incomplete excision of ureteric segments.

Diagnostic confirmation relies on imaging modalities including ultrasound, intravenous urography, voiding cystourethrogram (VCUG), contrast-enhanced CT or MRI, and functional nuclear scans. However, in this case, the diagnosis was mainly supported by VCUG and NCCT and, crucially, intraoperative visualization which revealed dual ureteric stumps.

Completion ureterectomy during a simple nephrectomy requires a longer or separate incision and, in some cases, a transabdominal approach, which can increase surgical risks and recovery time. Problems related to leftover distal ureters are rare and can usually be managed later if needed. Studies suggest that complete ureter removal is not always necessary, especially for benign conditions. Partial ureterectomy is often sufficient, and total removal might increase the risk of harming a healthy ureter, especially in duplex systems. However, if vesicoureteral reflux (VUR) or stones are present, complete ureterectomy may be considered to prevent complications. Keeping the ureter stump as short as possible is advised to reduce risks.[4] Androulakakis et al kept ureter stump as short as possible, as longer ureteric stumps may predispose patients to develop USS.[1] Ajayi et al added that distal ureterectomy may increase the risk of injury to the ipsilateral lower-moiety ureter in duplex system, hence ureterectomy not advised.[5] Casale et al found that preoperative vesicoureteral reflux (VUR) is a key factor contributing to ureteric stump syndrome (USS) and therefore recommended completing ureterectomy in patients who have reflux to prevent future problems.[6]

Although only a small percentage of patients (approximately 1.1% to 10%) require intervention for ureteric stump syndrome, this can be managed either by open excision of the stump or through minimally invasive endoscopic techniques. However, diagnosis is often delayed due to the varied and subtle clinical presentation.[1,3] In Biswas et al for UTI, USS was managed by antibiotic, endoscopic subureteric teflon injection and surgical excision, if recurrent.[4] For discharging sinus with abscess, stricture, stone and empyema, laparoscopic/open completion ureterectomy was advised. Laparoscopic excision has advantages including magnified visualization, reduced morbidity, and faster recovery. Our case demonstrated the efficacy of laparoscopy in safely identifying and removing both native and clipped ureteric stumps. Intraoperative leak testing ensured bladder integrity, a crucial safety step. The procedure resulted in complete symptom resolution and no postoperative complications.

This report underscores the need for thorough evaluation of residual ureteric tissue in symptomatic post-nephrectomy patients and the value of minimally invasive surgery for managing complex cases.

CONCLUSION

Post-nephrectomy ureteric stump syndrome presenting with dual symptomatic ureteric remnants is an exceptionally rare and diagnostically challenging condition. Comprehensive imaging supplemented by laparoscopic exploration can facilitate identification and complete resection of all ureteric remnants. Laparoscopic completion ureterectomy is a safe, effective, and minimally invasive approach leading to symptom resolution and excellent clinical outcomes.

Importantly, when a ureteric stump is retained, it should be rendered non-refluxing through appropriate surgical techniques such as marsupialisation or complete excision to prevent future complications including recurrent infections, stone formation, and persistent urinary symptoms. The presence of vesicoureteral reflux in a retained stump significantly increases the risk of ureteric stump syndrome and should be addressed prophylactically during the initial nephrectomy or corrected definitively during completion ureterectomy.

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