Robotic repair of a rare case of symptomatic "Ureterosciatic Hernia"

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ABSTRACT

Ureterosciatic hernia (USH) is a rarely described entity and is an extremely rare cause of refractory flank pain. We report the diagnostic dilemma, and sequential endourological and finally the successful robotic management of one such symptomatic USH in an elderly woman who had presented with ipsilateral refractory flank pain, hydroureteronephrosis, and compromised renal function. We have also reviewed the current literature regarding the etiopathogenesis, presentation, diagnosis, and management of USHs. To the best of our knowledge, this is the first such case to describe the robotic-assisted laparoscopic management of a case of USH.

Key words: Laparoscopy, robotic, ureteral hernia, ureteral obstruction, ureteric reimplantation, ureterosciatic hernia

INTRODUCTION

We report and describe the presentation and management of a rare case of symptomatic ureterosciatic hernia (USH). The robot-assisted laparoscopic technique of repair of USH has not been reported in the English literature. To our knowledge, this is the first such reported case of symptomatic USH that was repaired using the robot-assisted laparoscopic technique.

CASE REPORT

A 75-year-old Caucasian woman was referred to us with chronic left-sided flank pain for the past several years. She had a history of an uneventful abdominal hysterectomy performed 6 years back. At presentation, she was afebrile and her general examination was unremarkable, her urine analysis, blood biochemistry including blood urea and serum creatinine were also within normal limits. A plain X-ray KUB did not show any evidence of nephrolithiasis and an ultrasound-KUB revealed left gross hydroureteronephrosis (HDUN). Based on this, we entertained an initial empirical diagnosis of left obstructive uropathy possibly due to a left ureteric stricture/stone. Subsequently, she was planned for a renogram and computed tomography (CT). The radioisotope renogram revealed high-grade obstruction with a compromised left renal function of 17%. The plain CT scan of the abdomen and pelvis (without contrast) done was suggestive of left HDUN with a grossly dilated convoluted ureter till the level of S 2-3 vertebra seen on longitudinal cuts [Figure 1a], with protrusion outside the bony pelvis above the piriformis seen on transverse cuts [Figure 1b]. Based on the CT, a diagnosis of internal herniation of the ureter was speculated. The retrograde urography study revealed a normal caliber distal left ureter with an abnormal lateral protrusion and looping (curlicue) beyond the bony pelvic margin at the level of the sciatic foramina [Figure 1c]; this confirmed the diagnosis of an USH. The obstructed left renal unit was drained with a percutaneous nephrostomy (PCN) as prior multiple attempts at retrograde placement of a left guide-wire across the looped and partially obstructed left ureter had been unsuccessful. Subsequently through this PCN, an antegrade guide wire was passed which depicted a fixed kinking of the ureter [Figure 1d] and ureteric stenting was successfully performed. She initially elected to remain on observation, though complaining of severe discomfort with the stent. Her pre-stent renal function was 17% in the left kidney.
A second renal scan was done after six weeks of stenting and the left renal function was now up to 38% (post-endourological stenting with the stent in situ). Later, at six weeks, the stent became so intolerable that she elected to have it removed and decided for a definitive surgery. After discussing the various surgical options with the patient, she elected to undergo a robot-assisted laparoscopic repair of her left USH.

The robot-assisted laparoscopic procedure was initiated under general anesthesia with the patient in steep trendelenburg position, pneumoperitoneum, and four ports. A robot-assisted meticulous laparoscopic reduction of the left USH (at the point where the distal ureter was identified entering the sciatic foramen) and ureterolysis (releasing from surrounding adhesions) were carried out successfully. The released ureter from hernial sac appeared well vascularized; thus, we decided not to excise the ureter and employ ureteroneocystostomy. A ureterotomy was made for retrograde insertion of a 26 cm/6Fr JJ stent, which was done successfully, and the ureterotomy was closed using 5-0 polyglactin absorbable suture. The hernial defect was repaired in two layers with a 3-0 nonabsorbable polypropylene suture in a running manner. The patient made an uneventful rapid recovery and the operating time, blood loss, and hospital stay were 90 minutes, <50 ml, and 18 hours, respectively. At the 10th week of follow-up, her JJ-stent was removed in our outpatient clinic. Later at 3 months follow-up, her renogram left renal function improved to 43%; currently, the patient is doing well [Figure 2].

DISCUSSION

Sciatic herniation of the ureter has been rarely reported in the literature.[1-5] USH is a prolapse of the ureter along with the peritoneal wall through the sciatic notch. Anatomically, the sciatic notch is divided by the sacrospinous ligament into the greater and lesser sciatic foramen. The piriformis muscle subdivides the greater sciatic foramen into a potential suprapiriformis and infrapiriformis compartments. USH generally protrude through the suprapiriformis space (which transmits the superior gluteal nerves and vessels). The ovary, bladder, colon, and the small bowel are also known to herniate through the sciatic notch.[5] USH generally occurs in elderly women; predisposing factors that have been speculated include abnormality or atrophy of the piriformis muscle due to underlying neuromuscular disorders and locomotor diseases of the hip joint and lower extremity[2,5] and congenital pelvic fascia defects. Clinical symptoms of USH consist of vague abdominal pain, flank discomfort (due to obstructive uropathy),[5] pelvic-lower back, and/or thigh pain (due to compression of the sciatic nerve).[4] A clinical diagnosis is generally difficult to establish. The classical pathognomonic diagnostic hallmark of the

Figure 1: (a) CT showing the left hydroureteronephrosis (arrows) in longitudinal cuts, (b) Retroiliac displaced ectopic ureter (single arrow) anterior to the piriformis muscle (piriformis shown by double arrows) in transverse cuts of the CT-urogram, (c) An RGU showing the contrast-filled retroiliac “curlcue” left ureter (see arrow) in the sciatic notch, (d) Nephrostogram showing a fixed kinking (see arrows) of the left ureter. (Note: Panel Fig-1d shows the image to be laterally inverted as the patient was subsequently placed in a prone position for a prior PCN)
USH is the urographic demonstration of a postero-inferolaterally displaced redundant loop of horizontally oriented ureter protruding through the sciatic notch ("curlicue" ureter). A CT-urogram depicting a combination of ipsilateral HDUN with transverse cuts demonstrating a contrast-filled ureter posterolateral to the ischial spine and anterior to the piriformis muscle as in the present case helps to confirm the diagnosis of USH in a majority of the patients. Various management options available include (i) surveillance; (ii) ureteric stenting; (iii) surgical reduction of the hernia with ureterolysis, obliteration of the hernial orifice, and reinforcement of the defect; and (iv) surgical reduction of the hernia with excision of herniated segment of the ureter with ureteroneocystostomy, repair of the hernial orifice, and reinforcement of the defect. Judicious observation should be reserved for asymptomatic patients with an incidentally detected USH. Ureteric stenting (if feasible) is best viewed as a temporary minimally invasive option in the early stage of USH with compromised renal function, as it may provide temporary relief by reducing the ureteral hernia and providing stability to the redundant ureter with free drainage. Retrograde ureteric stenting is often cumbersome, prone to frequent failures; in such situation, it may necessitate a PCN to stabilize renal function and perform antegrade ureteric stenting as done in the present case during initial management. Indications for a surgical repair include refractory renal pain with a progressively deteriorating renal function not responding to ureteric stenting or urinary diversion. USH have been successfully repaired by open and laparoscopic surgery. Surgical reconstruction includes reducing the herniated segment of the ureter, excising the redundant ureter with ureteroureterostomy or ureteroneocystostomy, and repair of hernia sac. The alternative surgical option includes reduction of the herniated ureter, ureterolysis, ureterotomy (for retrograde insertion of JJ stent), closure of ureterotomy, ureteropyexy (fixation of the ureter), and sciatic-hernioplasty (reinforcement and obliteration of the hernial defect). This was successfully performed in the present case. This confirms the feasibility, safety, and efficacy of the technique of robot-assisted laparoscopic repair of USH.

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