Functional medicine

Backtable ureteroscopy for retrieval of retained stent or stone: A novel technique in renal autotransplant

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1. Introduction

Loin pain hematuria syndrome (LPHS), first described in 1967, is a disorder of chronic, severe flank pain without an identifiable source. Patients suffer from extreme unilateral or bilateral flank pain accompanied by microscopic or gross hematuria. The etiology behind this syndrome remains unclear. Pathophysiologic mechanisms of LPHS include immune hypersensitivity, abnormal glomerular basement membrane thickening, somatization, abnormal ureteral peristalsis, intratubular calcium deposition, and nephritis; however, the diagnosis of LPHS remains a diagnosis of exclusion. Diagnostic criteria include characteristic renal pain present for at least 6 months requiring substantial opioid therapy as treatment, hematuria present in multiple urinalyses, and lack of other etiology of symptoms. Evaluation often includes urinalysis, renal ultrasound, abdominal CT scan, and renal biopsy.

Despite multiple proposed interventions, many patients suffer from this pain for years, requiring chronic use of opioids, before ultimately receiving curative treatment. Medical therapies including analgesics and ACE inhibitors are sometimes able to provide patients adequate symptom relief. Other minimally invasive therapies such as intraureteric capsaicin injection and ureteric bupivacaine infusion have shown mixed results. Non-invasive or minimally invasive therapies should be attempted primarily as patients with LPHS do not suffer long term decline in renal function and up to 30% of patients will have spontaneous resolution of their symptoms. In patients with persistent symptoms despite trials of medical therapy, surgical options for LPHS should be considered.

Surgical options consist of renal denervation, nephrectomy, and renal autotransplantation. Renal denervation has only a 27% rate cure for patients with LPHS. Renal autotransplantation, first described in 1985, holds the promise of cure and making chronic pain patients “changed people” within only a couple weeks from surgery. Renal autotransplantation is a safe procedure which can provide pain improvement in 90% of patients.

Nineteen patients have undergone renal autotransplantation at the University of Utah over the past 3 years. Of these patients, two had intra-renal objects present at the time of surgery. One had a retained nephrostomy tube fragment at the time of transplantation and another had a renal stone. Both patients underwent laparoscopic hand-assisted nephrectomy. This paper describes one case in which "backtable ureteroscopy" was used to remove the retained object prior to autotransplantation (Fig. 1).

2. Case report

A previously healthy 34 year old female was referred for chronic loin pain hematuria syndrome. She initially noticed severe right flank pain in 2003 and suffered from this pain since that time despite multiple attempted interventions. Prior to referral, she had seen multiple physicians, including urologists, who were unable to find a solution for her pain. Her kidney appeared normal without renal dysfunction. The only abnormality was a small, right upper pole kidney stone which had not passed for multiple years. While the stone was not positioned in a location that caused obstruction or one that typically causes severe pain. She had classic symptoms of obstructed nephrolithiasis. After years of suffering, she was diagnosed with loin pain hematuria syndrome. Her chronic pain could no longer be attributed to the kidney stone alone. At this...
point, we discussed the option of right renal autotransplant. She had been considering the option of nephrectomy alone and was eager to undergo this procedure because it would preserve her renal function. Prior to her operation, she underwent renal hilar block with interventional radiology. She had a complete reduction in her pain after injection, which returned approximately 24 hours later when the block had worn off.

Pre-operative imaging demonstrated normal renal anatomy with a single artery, vein, and ureter. The renal stone was again visualized. The kidney was explanted with a right laparoscopic hand-assisted nephrectomy and taken to the backtable. After flushing the kidney with preservation solution and cooling it in an ice bath, ureteroscopy was performed to identify and remove the retained stone (Fig. 1). The stone was retrieved with a basket and removed successfully. The kidney was then prepared for transplant and transplanted into the right lower quadrant in standard fashion.

The patient recovered from the procedure well and reported complete resolution of flank pain on post-operative day 1. The transplanted kidney functioned well (creatinine 0.61) after the procedure. She was discharged from the hospital on post-operative day 4 without complication.

3. Discussion

Renal autotransplantation is a well described procedure for treatment of renal artery stenosis, renal artery aneurysm, and high ureteral injuries. While not first line therapy, renal autotransplantation is a safe and effective treatment modality for carefully selected patients with LPHS non-responsive to less invasive therapies. Renal autotransplant has been shown to provide long term pain relief for 70–100% of patients with LPHS, with follow-up extending to 8 years and beyond. As evidence mounts demonstrating the safety and efficacy of renal autotransplant for LPHS, further research is required to optimize this procedure to provide the best outcomes for patients.

To our knowledge, this is the first description of backtable ureteroscopy to remove retained objects from the kidney prior to autotransplantation. From our limited experience, it is a safe method to prepare kidneys for autotransplantation. Removal of retained objects prior to autotransplantation can help protect the graft kidney by removing potential sources of infection or encrustation and preventing obstruction, ultimately improving graft survival. Furthermore, this procedure is technically easier than post-

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Fig. 1. Legend: A: Backtable ureteroscopy of an explanted kidney. B: External view of ureteroscope within renal graft. C: Kidney stone as seen on ureteroscopy. D: Kidney stone as seen on CT.
transplant ureteroscopy due to the position of the vesicoureteral anastomosis high on the dome of the bladder. While further experience with this method is required, backtable ureteroscopy should be in the toolkit of surgeons performing renal autotransplantation.

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Conflicts of interest

No conflicts of interest exist for any of the authors.

Appendix A. Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.eucr.2018.01.010.

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