Post-pyeloplasty flank pain treated with laparoscopically-assisted renal autotransplantation

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LEGA IC, BROCK GB, LUKE PPW. Post-pyeloplasty flank pain treated with laparoscopically-assisted renal autotransplantation. The Canadian Journal of Urology. 2004;11(6):2459-2460.

Despite excellent overall results, some patients continue to experience flank pain post-pyeloplasty. For the first time, we report the successful use of laparoscopically-assisted renal autotransplantation in the treatment of refractory flank pain post-pyeloplasty.

Key Words: laparoscopy, autotransplantation, pyeloplasty, ureteropelvic junction obstruction

Case report

An otherwise healthy 27 year old female was referred with a history of intractable left flank pain and daily narcotic use. One year previously, she had an open left pyeloplasty for symptomatic ureteropelvic junction obstruction. However, her pain had persisted, despite treatment with anti-inflammatory agents, antidepressants, and narcotics. Her pain also appeared to worsen with increased fluid intake and was ameliorated through ureteral stenting. Urinalysis was negative for blood and infection. Surprisingly, the presence of left-sided ureteral obstruction was not demonstrated with lasix renography, computerized tomographic urography, or retrograde pyelography. Nuclear renography also indicated that renal function was equally divided between her kidneys. It was, therefore, believed that despite the absence of diagnostic tests demonstrating obstruction, she may have had renal-based pain that was sensitive to alteration of urinary flow. Potential therapeutic options included repeat pyeloplasty and endopyelotomy. However, given the results of our diagnostic tests, it was not clear whether the drainage of left kidney could be improved upon or whether her pain could be ameliorated with the improvement of urinary drainage. Hence, nephrectomy was also discussed with the patient. In order to salvage renal function, ensure proper urinary drainage and to achieve renal denervation, autotransplantation was performed.

Using three laparoscopic ports situated along the lateral left rectus border, transperitoneal left donor

Accepted for publication November 2004

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nephrectomy was performed. After the descending colon had been dissected from the anterior surface of the left kidney, the ureter was traced to the renal pelvis and the renal vessels were mobilized. Although there was a significant amount of scar tissue around the renal pelvis and renal vein from the previous pyeloplasty procedure, the kidney was successfully mobilized and the ureter, renal vein and artery were isolated. The ureter was divided 1 cm distal to the ureteropelvic junction and the renal artery and vein were secured and divided using plastic locking clips and vascular staples in the standard fashion of laparoscopic donor nephrectomy as described by Kavoussi et al.[1] Within 3 minutes of arterial ligation, the kidney was extracted through the caudal port, which had been converted into a small Gibson incision. The kidney was immediately re-perfused with 1 liter of University of Wisconsin solution and the ureteropelvic junction was resected to fresh renal pelvic tissue. Through the Gibson incision, the kidney was anastomosed to the left external iliac vein and artery using 6.0 non-absorbable running sutures. Upon release of the vascular clamps, the kidney perfused well and produced urine immediately. The remaining distal left ureter was shortened down to well-vascularized tissue and a spatulated ureteropyelostomy was performed using continuous 5.0 monofilament absorbable suture prior to closure of the incision. The total operative time was 360 minutes and the estimated blood loss was 500 ml.

A total amount of 96 mg. of morphine equivalents were administered during the hospital stay, and our patient was discharged home without narcotics. One year later, our patient is pain-free and has a normal lasix renogram.

Discussion

Both endopyelotomy and repeat reconstructive procedures have been advocated in the treatment of primary pyeloplasty failures.[2,3] Although the pyeloplasty procedure failed to cure our patient's flank pain, it was unclear whether low grade obstruction (undetectable by standard tests) was responsible for her refractory pain. Therefore, it was dubious whether repeat pyeloplasty or endopyelotomy would be able to improve urinary drainage and whether improved urinary drainage would be able to treat her flank pain. Renal autotransplantation has been described in the treatment of loin-pain hematuria syndrome, cancer, vascular disease, and in the treatment of ureteral injury.[4,5] For the first time, we have demonstrated that autotransplantation can also be used to successfully treat refractory flank pain post-pyeloplasty.

There are some technical points that merit discussion. As a result of the division of reliable branches of the renal hilar blood supply feeding the proximal ureter during the original pyeloplasty procedure, urothelial tissue distal to the previously reconstructed ureteropelvic junction may have a tenuous blood supply post-transplantation. Therefore, this tissue must be resected prior to autotransplantation. Failure to do so may lead to stenosis of an ischemic ureteral remnant. By delivering the kidney into the iliac fossa, the renal pelvis and distal ureter can be easily trimmed to well-vascularized tissues in a tension-free manner, optimizing the conditions for reconstruction of the ureteropelvic junction. Therefore, we believe that autotransplantation may additionally be considered as a treatment option in pyeloplasty failures *with* diagnostic evidence of impaired UPJ drainage and compromised ureteral blood supply. Additionally, the autotransplant procedure denervates the kidney, thereby eliminating renal-based pain.[5] The ability to denervate the kidney makes autotransplantation the ideal procedure in the management of the patient with flank pain post-pyeloplasty in whom the diagnosis of urinary obstruction is unclear.

Although technically challenging after previous pyeloplasty, laparoscopic nephrectomy with autograft retrieval through the Gibson incision eliminated the need for an additional flank incision, which likely reduced post-operative pain and hastened convalescence. With increasing clinical experience, the entire autotransplantation procedure may soon be performed laparoscopically,[6] further minimizing morbidity.

In summary, although we do not believe that autotransplantation should be used to treat all patients failing ureteropelvic junction repair, the laparoscopically-assisted autotransplantation procedure is an important addition to the surgical armamentarium used to treat selected patients with refractory flank pain post-pyeloplasty. □

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