

Original Article

Laparoscopic Ureteropelvic Junction Decompression for the Management of Obstruction

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ABSTRACT

Purpose: We reported the outcome and complications of laparoscopic aberrant vessels transposition without performing pyeloplasty in patients with ureteropelvic stenosis.

Materials and Methods: A total of 10 patients with ureteropelvic stenosis accompanying with aberrant vessels underwent laparoscopic transposition of vessels between June 2001 and March 2003. 4 of the cases were male and 6 were female, and 4 out of 10 had right side and 6 had left side involvement. The mean age was 31.9 (14 - 59). Reaction of aberrant vessels was performed by cutting the vein and fixing the artery to the lipid layer around the kidney and renal pelvis.

Results: The procedure was successful in all the cases without any perioperative complications. The operative time was 2.20 hours (1.45 - 2.50) including cystoscopy, DJ placement, and transposition. Mean hospital stay was 2.9 (2-5) days, and patients were followed up an average of 9.1 (3-22) months. Except one case of rehospitalization due to pain, no complication occurred. The rate of clinical and radiological improvement was 100% and IVP showed a decrease in the degree of hydronephrosis as well as the resolution of obstruction observed in renogram.

Conclusion: With regard to our findings, it seems, at least in a proportion of patients with UPJ stenosis accompanied with crossing vessels, that mechanical compression is the mere cause of obstruction and primary stenosis does not coexist. As a result, treatment is achieved by transposition of the crossing vessels without entering the renal unit.

KEY WORDS: transposition, aberrant vessel, UPJ obstruction, laparoscopy, pyeloplasty

INTRODUCTION

Aberrant vessels are considered as the extrinsic cause of UPJ obstruction particularly in adults and it has an incidence of 15-52%.

However, the exact role of aberrant vessels in ureteropelvic junction obstruction (UPJO) is still controversial. To date the generally accepted idea is that cutting, relocating the crossing vessels is not sufficient, and pyeloplasty is needed, as the obstruction is a primary intrinsic type due to a

dysfunctional propagation of peristaltic waves.⁽¹⁾

Von Rokitsansky was the first one who lighted on the association of hydronephrosis with aberrant vessels in 1842.⁽²⁾ Open surgical transposition of the vessels responsible for UPJO was performed and reported by H. Nixon⁽³⁾, C. McCreadie⁽⁴⁾, and T.L. Chapman.⁽⁵⁾ However, according to some references, the role of crossing vessels in obstruction is trivial.^(6, 7)

We describe our experience in laparoscopic surgery of 10 cases with UPJO and lower pole aberrant vessel.

MATERIALS AND METHODS

A total of 10 patients (4 males and 6 females, mean age 31.9, 14-59) underwent transperitoneal laparoscopic transposition of aberrant vessels. 4 had right sided and 6 had left sided involvement. One case was detected accidentally and others admitted with pain. Three trocars were inserted intraoperatively. Parietal peritoneum was dissected on linea alba, umbilical area (10 mm), midline, 5 cm above umbilicus (5 mm), and midclavicular line next to the umbilicus (10 mm). The colon was pushed aside and upper ureter and renal pelvis was set loose. The vein was cut and the artery was relocated and fixed to the pelvis. Afterwards, if normal peristalsis and complete emptying of renal pelvis was seen, the artery would be fixed to the lipid layer around renal pelvis by means of a vicryl suture. Classic pyeloplasty was done in case of incomplete drainage of the pelvis. No drain was placed and patients were followed up by renogram and IVP after 3 months, and clinical examination, urine analysis, urine culture, CBC, and Cr.

RESULTS

The procedure was successfully done without any perioperative or postoperative complication. The vein was cut and the artery was fixed to the renal pelvis and the lipid layer around the kidney in all patients. Open conversion did not occurred at all. The operation time was 2.20 hours (1.45-2.50) including cystoscopy, DJ placement, and transposition and mean hospital stay was 2.9 (2-5) days. 3 patients received intra venous Pethedine HCL (25 mg) but other patients did not require analgesics during hospital stay.

Perioperative or postoperative transfusion was not required in any case. Patients were followed up for an average 9.1 (3-22) months.

One case of pain and UTI was observed during the follow-up in whom conservative therapy was efficient. Radiological evaluation of all patients showed a reduction in hydronephrosis degree and patients recovered from pain and other clinical problems existing before operation. It can be inferred that radiological and clinical improvement was 100%. Blood pressure and urine culture were normal in all cases. 7 patients underwent cystoscopy preceding the operation and DJ catheter was placed in the ureter. In 3 cases DJ catheter was not used.

DISCUSSION

Lower renal pole aberrant vessels accompanying UPJO are frequent and it is believed that the establishment of UPJ obstruction is due to abnormal propagation of peristaltic waves in this point and the extrinsic compression of crossing vessel does not play a primary role. Consequently, cutting or transposition of vessels is not sufficient and pyeloplasty is necessary⁽¹⁾. However, there are a few reports of improvement without complementary pyeloplasty.⁽³⁻⁵⁾

Open surgery is the approach used in previous studies, but since laparoscopy is applicable and less invasive, we can use it to relocate these vessels without pyeloplasty. Smith and coworkers used Chapman's technique in open surgeries of 19 patients. They dispensed with pyeloplasty and performed transposition in cases in which normal peristalsis and emptying of renal pelvis were observed. They were successful in 80% of patients. Durand⁽¹⁴⁾ cut the vessels in 97 patients underwent open surgery and pyeloplasty was required in only 10%. Kelly cut the vessels using laparoscope in 2 cases, both with clinical improvement.⁽¹⁵⁾ Johnston showed resolution of obstruction in 32 out of 36 transpositions by pelvic pressure studies.⁽¹³⁾ Cutting renal arteries results in ischemia and hypertension as they are end arteries, so it is not recommended. Whereas, cutting aberrant veins, particularly right renal vein which is shorter is possible and brings out no complication. Thus, we decided to cut the vein and relocate the artery and fix it to the lipid layer of pelvis and kidney.

Patients were selected to undergo pyeloplasty or transposition intraoperatively, according to observation of emptying and decompression of renal pelvis, and normal peristalsis. In this approach we do not enter the renal system avoiding the risk of leakage, fistula, secondary stenosis, and UTI seen in the classic pyeloplasty. Also transposition of vessels is more feasible and faster than performing pyeloplasty and patients do not require DJ catheter and drain as we did not insert DJ catheter in the last 3 cases. Patients can be discharged home on the first postoperative day (last 3 cases).

Symptoms were relieved or improved after the operation. IVP after the 3rd postoperative month demonstrated reduction in the degree of hydronephrosis, dilated urinary system, or patent UPJ in all of the cases, indicating a 100% success. These results are comparable to open and laparoscopic pyeloplasty outcomes.⁽⁹⁻¹²⁾

It is note worthy to mention that preoperatively detection of the cases is not possible and we did not evaluate the existence of aberrant vessels in any patients either.

It seems that in some patients with UPJO and aberrant vessel, extrinsic compression and angulation of the ureter plays a primary role in the obstruction in the absence of any primary disorder. Accordingly, treatment can be obtained merely by transposition of the vessels. Further studies with larger sample size and longer follow-up are warranted in order to confirm our findings.

CONCLUSION

Based on the mentioned findings, it seems at least in a proportion of patients with UPJ stenosis accompanied with crossing vessels, that mechanical compression is the mere cause of obstruction and primary stenosis does not coexist. Thus, the treatment is achieved by transposition of the crossing vessels without entering the renal unit.

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