

Original article

Clinical analysis of retroperitoneoscopic nephroureterectomy for renal tuberculosis

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Abstract

Objectives: To explore the feasibility and safety of retroperitoneoscopic nephroureterectomy for kidney tuberculosis.

Methods: Forty-eight retroperitoneoscopic nephroureterectomies and thirty-five nephroureterectomies for kidney tuberculosis procedures were performed from June 2008 to December 2014. The patients consisted of 53 males and 30 females with a mean age of 36 years (range: 26–51 years). The patients' data were reviewed and analyzed.

Results: The retroperitoneoscopic nephroureterectomy procedures were completed successfully in 48 cases with no conversions to open surgery. The mean operating time was 170 minutes (range: 121–258 minutes), the mean blood loss was 110 ml (range: 70–250 ml), and the mean hospital stay was 5.70 days (range: 5–14 days); these were all much less than nephroureterectomy procedures ($P < 0.05$). A total of five minor complications (10.4%) occurred, injury to the peritoneum was observed in three patients, and infection at the incision site was observed in two patients, there were no obvious difference between the two surgical methods ($P > 0.05$). Seventy-five patients were followed up, and the average follow-up time was 12.5 months (range: 6–20 months). All the patients recovered without any lesions remaining.

Conclusions: The results of this study indicate that retroperitoneoscopic nephroureterectomy is a feasible, safe, effective, and less invasive treatment modality for treating renal tuberculosis.

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Keywords: Renal tuberculosis; Retroperitoneoscopic; Nephroureterectomy

Tuberculous nonfunctioning kidney has been recognized as a contraindication for laparoscopic surgery because of severe perinephritis, dense fibrotic adhesions, intraoperative hemorrhage, spillage of caseous material, and an increased open conversion rate. However, the accumulation of laparoscopic experience has improved our understanding of laparoscopic anatomy and has allowed safe and effective

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nephroureterectomies to be performed with a refined level of technical skill. In the present study, we summarized the results of 48 consecutive retroperitoneoscopic nephroureterectomies and 35 nephroureterectomies for treating renal tuberculosis.

Materials and methods

In the present study, the patients consisted of 53 males and 30 females with a mean age of 36 (range: 26–51 years). Of these 83 patients, 49 had lesions on the left kidney, and 34 patients had lesions on the right kidney. Eighty patients had pulmonary tuberculosis, 72 patients had ureteral tuberculosis, and eight patients had intestinal tuberculosis. All the patients were diagnosed by symptoms, a urinary tuberculosis test, cystoscopy and computed tomographic urography (CTU). They all had normal renal function on the contralateral side. Severely impaired renal function of the lesion side was confirmed before the operation. Antituberculosis chemotherapy was administered to the patients for one half to six months prior to the surgery. No active tuberculosis lesions were observed, and the erythrocyte sedimentation rate (ESR) levels were normal before the operation. All the operations were performed successfully without conversion to open surgery.

In the retroperitoneoscopic nephroureterectomy procedure, general anesthesia was induced via tracheal cannulation. The patients were placed in the lateral position with the diseased side facing up. The ports were usually placed as follows: 2 cm above the iliac crest in the midaxillary line, below the twelfth rib in the posterior axillary line, the anterior axillary line. The retroperitoneoscopic working space was developed, and the psoas muscle was identified as a landmark. Gerota's fascia was opened, and the kidney with the lesion was dissected along the psoas muscle. After the renal pedicle was identified, the renal arteriovenous was exposed and removed after it was occluded with Hem-o-lok clips. The renal lesion was completely dissociated outside the capsular adipose and along the ureter to the bifurcation of the iliac vessels. In this cohort, 28 cases were moved to a horizontal position, and an approximately 4 cm oblique incision was made in the lower abdomen to remove specimens and dissociate the lower ureteral segment under direct vision. A group of 20 patients underwent resection of the ureteral orifice and the inner wall using a lithotomy position transurethral resection before the nephrectomies, and the specimens were removed through a minimal incision in the lower abdomen.

The nephroureterectomy procedure proceeded under continuous epidural anesthesia, and the kidney with the lesion was dissected and removed after the renal arteriovenous and the ureter were blocked.

The collected data were analyzed using the SPSS software (Statistical Package for the Social Sciences, version 13.0, SPSS Inc, Chicago, Illinois, USA). The statistical analysis used *t* tests and the Fisher's Exact Test, where appropriate. A *P* value less than 0.05 was considered significant.

Results

The retroperitoneoscopic nephroureterectomy procedures were completed successfully in 48 cases with no conversions to open surgery. The mean operating time was 170 minutes (range: 121–258 minutes), the mean blood loss was 110 ml (range: 70–250 ml), and the mean hospital stay was 5.70 days (range: 5–14 days). In the nephroureterectomies group, the mean operating time was 220 minutes (range: 165–292 minutes), the mean blood loss was 184 ml (range: 150–215 ml), and the mean hospital stay was 7.93 days (range: 6–18 days). These values in the retroperitoneoscopic nephroureterectomy procedures were all significantly lower than in the nephroureterectomy procedures ($P < 0.05$).

A total of five minor complications (10.4%) occurred in the retroperitoneoscopic nephroureterectomy group; injury to the peritoneum was observed in three patients, and infection at the incision site was observed in two patients. And in nephroureterectomy group, there were four minor complications; two peritoneum injuries and two incision infections. There were no obvious differences between the two surgical methods ($P > 0.05$) (Table 1).

Seventy-five patients were followed-up, and the average follow-up time was 12.5 months (range: 6–20 months). After the operations, the symptoms of urinary frequency and urgency disappeared, and no active tuberculosis lesions were observed at the ESR level. Routine urinalyses results were normal. The detection of acid-fast bacilli in all of the patients' postoperational urinary samples was negative. All the patients recovered without any remaining lesions.

Discussion

Retroperitoneoscopic nephroureterectomy for kidney tuberculosis has presented several technical difficulties for laparoscopic procedures, and different medical units have chosen different operation

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