Is Laparoscopic Nephropexy Improving the Quality of Life

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ABSTRACT

Short- and long-term effectiveness of laparoscopic nephropexy was evaluated in patients with symptomatic nephrop-tosis especially quality of life of the patients and repositioning of the ptotic kidney. In 87 patients with symptomatic nephrop-tosis laparoscopic nephropexy was performed from 1994 to 2003. In 86 patients trans-abdominal approach was used and retroperitoneal in one patient. Visual pain scale was used for pain evaluation before surgery and six month after surgery. At the same period creatinine serum concentration, urine examination, i.v. urography and ultrasound in supine and erect position was made. There was statistical significant decrease of pain from 6.5±1.055 (SD) to 2.4±1.577 (SD) (p=0.000), according to visual scale, and decrease of urinary tract infections (p=0.000) in patients after laparoscopic nephropexy. Average operative time was 45.9±8 (SD) min., and hospital stay 3.4±0.7 (SD) days. Reposition of the kidney was successful in 70 of 80 patients. Laparoscopic nephropexy importantly improved the quality of life in patients with symptomatic nephrop-tosis. Surgical procedure was safe and successful in most of the patients.

Key words: nephroptosis, nephropexy, laparoscopic surgery, quality of life, pain, urinary tract infection

Introduction

At the beginning of the 20th Century nephroptosis, often referred also as floating kidney or movable kidney, was familiar and frequent diagnosis among urologists, general practitioners, other specialist and also patients\(^1\). Nephropexy was commonly performed operation in women. Nearly 200 different surgical procedures were described\(^2,3\). Association between nephroptosis and »neurasthenia« clouded objectivity of the data prior to 1920. Floated kidney was assumed as imaginary disease\(^4–6\).

In last 20 to 30 years the disease practically eclipsed in the United States and the physicians became unfamiliar with nephroptosis\(^7\).

Recently, in last 12 years, laparoscopic surgical techniques have been applied to the treatment of symptomatic nephroptosis and new interest arise for the study of the condition and the results of contemporary surgical therapy\(^8,9\).

Only symptomatic nephroptosis is relevant for the patient and the physician. Displacement of the kidney has to be more than 5 cm down-ward in erect position as definition of nephroptosis\(^10\). Flank or back pain in the erect position is most frequent manifestation of the condition, urinary tract infections, proteinuria, erythrocyturia, even hypertension, nephrosclerosis, and Fraley’s syndrome may be present and may be a consequence of nephroptosis\(^11–14\). Nephrosclerosis, nephrolithiasis and renal hypertension are not proven consequences of nephroptosis. The most severe manifestation of the condition is Dietl’s crisis (severe colicky, flank pain, nausea, chills, tachycardia, oliguria, and transient hematuria or proteinuria)\(^15\).

First laparoscopic nephropexy was reported by Urban et al.\(^16\).

Quality of life was only marginally studied, especially in quantitative fashion, in the reported series of patients with symptomatic nephrop-tosis after nephropexy.

In Department of Urology, General Hospital Slovenj Gradec, Slovenia the first laparoscopic nephropexy was performed in March 1994.

Hypothesis of our study was that laparoscopic nephropexy is improving the quality of life of the patients, especially pain and even decreasing urinary tract infections.
From March 1994 till December 2003 all patients undergoing laparoscopic trans-abdominal nephropexy due to symptomatic nephropotosis were prospectively followed looking operation, recovery after surgery, complications of the procedure, mobility of the kidney after surgery, patients’ well being, pain scale and frequency of urinary tract infections.

**Patients and Methods**

**Patients**

From March 1994 till the end of December 2003 a laparoscopic trans-abdominal nephropexy was performed in 87 patients with symptomatic nephropotosis in General Hospital Slovenska Bistrica, Slovenia. All the 87 patients were females. Average age was 48±7.3 (SD) years (range: 35–70). Average body weight was 59.1±8.5 (SD) kg (range: 46–85). In 10 patients there was left side nephropotosis and in 79 right side. Two patients have nephropotosis on both, right and left side.

Average duration of clinical symptoms of nephropotosis was 3.1±1.4 (SD) years (range: 1–13). There were 7 patients without urinary tract infection, 35 with 1 urinary tract infection per year and 45 patients with more than 1 urinary tract infection per year. 17 patients had arterial hypertension. According to the classification of hydronephrosis from Peters there were 10 patients in class 0, 63 patients in class 1, and 14 patients in class 2. Orthostatic protenuria was observed in 48 patients, and orthostatic erythrocyturia in 35 patients.

37 from 87 female patients had other urological conditions, 13 cystitis, 8 nephrolithiasis, 1 pyelonephritis, and 15 urinary stress-incontinence.

**Surgery**

Indication for operating procedure was symptomatic nephropotosis for at least one year with descent of the kidney for 5 cm or more during posture changes from supine to erect position for 15 cm or more.

Laparoscopic trans-abdominal nephropexy was accomplished in 86 patients and retroperitoneal one in 1 patient.

Laparoscopic nephropexy was made in all the patients. Standard equipment for laparoscopic procedure was used.

General endotracheal anaesthesia has been induced in all the patients.

Retroperitoneal approach was used according to the description of Rassweiler in one case. In 86 patients trans-abdominal approach was used.

The patients were placed in a lateral decubitus position (45 degrees angle) with the operative side elevated. Three laparoscopic ports were placed: 10 mm along the umbilicus for telescope, 10 mm trocar paramedially below the costal margin, 5 mm trocar in the anterior axillary line at the level of iliac spine anterior superior.

When it was necessary, an additional 5 mm trocar was placed in a medial axillary line below the costal margin. We changed the ports’ positions in case of adhesion in the part of cekum and ascendent colon. The peritoneum was incised in the line of Toldt approximately 10–15 cm down from the lower edge. The colon was mobilized medially, the operative preparation of the retroperitoneal muscle was done. Gerota’s fascia was incised and the surgical preparation of the only lower pole of the kidney was performed. The kidney was fixed in its normal anatomic position using subcapsular suture with two 0 Vicryl (Ethicon) thread on the retroperitoneal muscles below the costal margin. We did not place drain after procedure. The peritoneum was closed by using the running suture with 4-0 Monocryl on cutting needle (Ethicon).

**Outcome measures**

Ultrasound with measuring of resistance index was performed preoperatively in supine and erect position. Intravenous urography was made preoperatively and postoperatively. Mobility of the kidney was measured quantitatively.

Serum creatinine concentration was lower than 120 umol/L in all the patients.

Routine postoperative control was performed 4 weeks, 3 months and 6 months after surgery, ultrasound and i.v. urography was performed during the last control.

Pain was classified according to visual pain scale from 0 to 10 before surgery and six months after surgery.

Urinary tract infections were diagnosed according to the criteria of Stamm and Hooton, and Brumfitt and Hamilton-Miller.

**Statistics**

In the statistical analysis the following descriptive statistics were calculated: minimum, maximum, mean, standard deviation, and the following statistical methods were used: paired t-test to estimate the difference between two means, and the sign test of paired data.

Microsoft Excel 2000 was used for computational part of the analysis. This report was written by use Microsoft Word 2000.

**Results**

In evaluating the possible changes of quality of life of patients with laparoscopic nephropexy 87 female patients with symptomatic nephropotosis were included in the study. Before surgical procedure average pain according to visual pain scale was 6.5±1.055 (SD). Most of the patients had at least 1 urinary tract infection per year (80 from 87), even 45 of them had more than one, and only 7 didn’t have urinary tract infection before laparoscopic nephropexy. Average blood pressure before surgery was 133±13/86±11 mmHg (SD).

Average operative time of laparoscopic nephropexy was 45.9±8 (SD) min. Patients have been hospitalized for average 3.4±0.7 (SD) days. In 12 patients small
Objective 79 patients 8 patients
Subjective 68 patients 19 patients
Evaluation of success Improvement No changes
Discussion
Surgical reposition of the ptotic kidney was completely successful in 70 from 80 patients. Results are in accordance with the data of McDougall et al. and others, generally reporting about 80 % success rate7,8,18.

In most articles describing the laparoscopic nephropexy in symptomatic nephroptosis a similar technique was used, namely trans-abdominal approach27,28. Because of modification of the technique, using preparation only the lower pole of the kidney, time of surgery is shorter (mean 45.9 min.) than in most of the published series (range: 60–167 min.)25,29,30. Some authors are using foreign material and others fascial flap or muscle bands for fixation of the kidney31,32. Retroperitoneal approach seems to be much more difficult technique because of limited space during the surgery. The average operating time is at least 103 minutes25.

With the exception of some small haematomas and pain we didn’t experience considerable complications among our patients. Although we did not use drainage, we didn’t observe clinically manifested retroperitoneal haematomas, pneumothorax and surgical site infection. These results are comparable to the bigger series of similar operations5,8.

All our patients had normal kidney function already before surgery if we had serum creatinine concentration as a marker. There was no hypertension among our patients.

Decrease of urinary tract infections among our patients was a consequence of surgery, but probably also of better medical care and prevention.

24-hour proteinuria and erythrocyturia, average blood pressure in standing position, possibly improved kidney histology and renal blood flow, and psychological indices of well-being are topics which were not adequately studied after laparoscopic nephropexy.
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REFERENCES


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DA LI LAPARASKOPSKA NEFROPEKSJI POBOJLJŠAVA KVALITETU ŽIVOTA?

SAŽETAK

U istraživanjima su proučavani kratkoroči i dugoročni efekti laparoskopske nefropeksije, na pacijentima oboljelim od nefroptoze. Uzorak je sadržavao 87 pacijenata, koji su tretirani laparoskopskom nefropeksijom u razdoblju od 1994. do 2003. godine. Kod 86 pacijenata je korišten trans abdominalni pristup, a kod jednog retroperitonijalni. Vizualna ljestvica boli korištena je prije operacije i 6 mjeseci nakon. U istom periodu je pronađen serumski kreatinin, rađene su pretrage urine, urografija te ultrazvuk sprijeda i straga. Kod pacijenata nakon laparoskopske nefropeksije pronađene su statistički značajne razlike u boli prema vizualnoj ljestvici 6.5±1.055 (SD) do 2.4±1.577 (SD) (p=0.000) i razlike u trans urinarnim infekcijama (p=0.000). Svakodnevno operativno vrijeme bilo je 45.9±8 (SD) min., a ostanak u bolnici 3.4±0.7 (SD) dana. Transplatacija bubrega bila je uspješna u 70 do 80 pacijenata. Laroskopska nefropeksija potvrdila se kao bitna u osiguranju kvalitete života kod pacijenata sa simptomatičnom nefroptozom. Kirurške metode bile su sigurne i uspješne kod većine pacijenata.