Laparoscopic Treatment of Simple Renal Cyst

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Abstract

Introduction. Renal cysts are a very common condition that can occur at any age from newborn to the elderly. Simple renal cysts are generally diagnosed incidentally on sonography, computed tomography (CT) scans, or intravenous urography performed for urinary tract or other abdominal problems.

Patients and Method. During the period of Nov 2011 to Oct 2012, 30 patients (mean age 60 years; range 42–77 years; 17 men and 13 women) with symptomatic, voluminous renal cysts were encountered in this study. The size of the cyst was ranging between 10 - 17 mm (mean 14mm).

All patients were studied with ultrasound, excretory urography, and contrast enhanced CT scans. In this series, all cysts were of type I according to the Bosniak classification.Transperitoneal laparoscopic deroofing technique was used.

Results. The operation was successfully completed laparoscopically in all cases with no conversion to open surgery.

There were no major perioperative complications. Two cases only developed ileus postoperatively and stayed for 3 days, this was due to some colonic adhesions that required more dissection. Hospital stay was 2days (range, 1-3 days).

After 12 months period of follow up, clinical improvement (disappearance of symptoms) was observed in 25 patients (84.4%). There were 4 patients who continued had lumber pain post operatively and this could be due to that the patient's symptom already due to backache and not related to the cyst. Only 1 patient had increased hydronephrosis that required percutaneous nephrostomy.

Conclusions. Laparoscopic deroofing of large simple renal cysts is an efficacious, safe and less invasive method of treatment and is recommended as a primary treatment for symptomatic simple renal cysts.

الخلاصة

المقدمة. الاكياس الكلوية هي حالة مرضية شائعة جدا حيث من الممكن أن تصيب مختلف الأعمار من الأطفال حديثي الولادة إلى كبار السن. عادة يتم تشخيص الاكياس الكلوية البسيطة عن طريق الصدفة بواسطة الفحص بالموجات فوق الصوتية ، المفراس، أو التصوير الملون للجهاز البولي حيث تجرى هذه الفحوص للتحري عن مشاكل اخرى الجهاز البولي او البطن.

المرضى و طريقة العمل. خلال الفترة من تشرين الثاني ٢٠١١ إلى تشرين الأول ٢٠١٢ ، تم دراسة ثلاثون مريضا يعانون من كيس الكلية البسيط. تراوحت اعمارهم بين ٤٢ و٧٧ سنة (متوسط العمر ٦٠ سنة)حيث توزعوا بين ١٧ ذكر و ١٣ انثى. بلغ متوسط قطر الكيس ١٤سم. أخضع جميع المرضى المشمولين بالدراسة لفحص الموجات فوق الصوتية للبطن، التصوير الملون للجهاز البولي ،و أشعة المفراس الملونة ، كانت جميع الاكياس من النوع الأول (كيس بسيط) وفقا لتصنيف بوسنياك.

وبعد اجراء الفحوص الروتينية للمرضى تم اجراء العملية تحت التخدير العام باستخدام جهاز المنظار حيث تم اجراء استئصال سقف للكيس وسحب السائل من داخله.

النتائج. تم إكمال العملية بنجاح عن طريق المنظار في جميع الحالات مع عدم وجود تحويل لعملية فتح البطن. لم تكن هناك مضاعفات كبيرةقبل, اثناء او بعد العملية. هنالك حالتين فقط كسل الامعاء بعد العملية مما تطلب بقائهما في المستشفى لفترة ٣ أيام ، وتم علاجهما علاجا تحفظيا.

تراوحت مدة رقود المريض في المستشفى بين ١-٣ أيام اي بمتوسط حوالي يومين فقط. بعد فترة ١٢ شهرا من المتابعة، لوحظ تحسن سريري (اختفاء الأعراض) في ٢٥ مريضا (٨٤.٤ ٪) . اربعة مرضى فقط هم الذين استمروا يعانون من الم في الخاصرة. وكان هناك مريض واحد فقط عانى من زيادة موه الكلية و الذي تطلب اجراء عملية تفويه الكلية عن طريق الجلد .

الاستنتاجات. عملية استئصال سقف كيس الكلية البسيط بالمنظارهي وسيلة فعالة وآمنة و أقل عدوانية و ينصح بها كطريقة أساسية لعلاج الاكياس الكلوية البسيطة.

Introduction

With the increased use of imaging modalities such as ultrasonography (US), computed tomography (CT), and magnetic resonance imaging (MRI), a corresponding increase in the number of incidentally detected renal masses has been noted, renal cysts comprise the majority of such renal masses.[1,2]

Renal cysts are a very common condition that can occur in anyone from newborns to the elderly. [3] Their incidence from birth to 18 years ranges 0.1%~0.45%, with an average incidence of 0.22%.[3]In adults, their incidence gradually increases with age, and by age 40, is about 20%, while at age 60, it rises to 33%.[4]

Simple renal cysts are generally diagnosed incidentally on sonography, computed tomography (CT) scans, or intravenous urography performed for urinary tract or other abdominal problems. [5]

However, some (large) renal cysts can cause symptoms such as flank pain, palpable lumps in the abdomen, hematuria, hypertension, or urinary tract obstruction. [6-8]

The treatment options for symptomatic cysts include aspiration, aspiration and instillation of sclerosing agents, percutaneus marsupialization, and open or laparoscopic unroofing.[9, 10]

In the era of the minimally invasive surgery, laparoscopic surgery has attracted many urologists' attention and has been progressively applied to manage a wide range of urological disorders. [11]

Laparoscopic renal cyst decortication is an alternative to open surgery and has proven to be similarly effective but less invasive compared to its counterpart. [11]

Patients and Method

During the period of Nov 2011 to Oct 2012, thirty patients (mean age 60 years; range 42–77 years; 17 men and 13 women) with symptomatic, voluminous renal cysts were encountered in this study.

All patients were studied with ultrasound, excretory urography, contrast enhanced CT scans and renal function tests. In this series, all cysts were of type I according to the Bosniak classification.

Preoperatively a simple diagnostic aspiration test and cystography were done in all patients to check the communication between a cyst and the pelvicaliceal collecting system, which may potentially lead to development of a retroperitoneal urinoma or urinary ascites if laparoscopic deroofing was used alone.

Operative technique

Allpatientswere managed by transperitoneal laparoscopic deroofing using a three-port technique.

Under general anesthesia, patients were positioned in the lateral position (with side containing the cyst up); transperitoneal access was established using veress needle. A pneumoperitoneum is created by insufflation of carbon dioxide toa pressure of 13 mm Hg. The first port (10 mm) was inserted on the lateral border of rectus abdominis muscle opposite the umbilicus. Another tow working ports (5 mm) were inserted after establishment of pneumoperitoneum on the anterior axillary line: One just below the costal margin and the other just above anterior superior iliac spine.

Longitudinal incision was done in the posterior peritoneum on the line of Toldt followed by medialization of ascending or descending colon using scissor and Maryland dissector. Aspiration of the cyst was done using aspiration needle under laparoscopic guidance. Excision of the cyst wall (deroofing) was then done using laparoscopic scissor. Cauterization of the edges was then done using laparoscopic electro cautery and tube drain is left. Removal of ports and closure of port sites were performed.

Results

The mean age of the patients included in this study was 60 years; range 42–77 years. The patients were divided in to 17 men and 13 women.

The diameter of the cyst was ranging between 10 - 17 cm (mean 14cm). Table No. 1

Table No. 1 Clinical data of the patients.

	Mean	Range
Age (years)	60	42 - 70
Cyst diameter(cm)	14.5	11.0 – 19.0
Sex	17 male	13 female
Total number	30	

The indications for surgical intervention were continuous lumbar pain in 20 patients (66.6 %), renal colic without evidence of other urologic disease in 2 patients (6.6 %), hypertension in 2 patients (6.6 %), and simple cyst causing pelvicaliceal obstruction in 6 patients (20 %) . Table No 2

Table No.2 Indications for surgical intervention.

Clinical presentation	**Number**	**%**
Dull Pain	20	66.6
Acute renal colic	2	6.6
Hypertension	2	6.6
Dilated pelvicaliceal system	6	20

The operation was successfully completed laparoscopically in all cases with no conversion to open surgery.

There were no major perioperative complications. The mean operative time was 60 minute (range 45-75 minutes).The mean hospital stay was 2 days (range 1- 3 days).

Post operatively all patients received injectable antibiotic and analgesia in day zero converted to oral form in day one postoperatively in 28 patients.

Most of patients (28 patients) started oral feeding within 24 hours and two cases only developed ileus postoperatively and stayed for 3 days, this was due to some colonic adhesions that required more dissection.

Table No. 3 Operative and postoperative data.

Parameter	Mean	Range
Operative time	60 minute	45 – 75 minute
Hospital stay	48 hours	24 - 72 hours
Oral feeding	27.2 hours	24- 72 hours
Drain removal	36 hours	24 - 72 hours

After 12 months period of follow up, clinical improvement (disappearance of symptoms) was observed in 16 patients (80 %) of patients presented with dull loin pain. There were 4 patients who continued had lumber pain post operatively and this could be due to that the patient's symptom already was due to backache and not related to the cyst. All patients presented with acute renal colic and all those with hypertension have got complete clinical improvement (disappearance of symptoms).

Follow up shows that 5 patients(84 %) of those presented with dilated collecting system get clinical and radiological evidence of improvement (no increment in hydronephrosis), while only 1 patient had increased hydronephrosis that required percutaneous nephrostomy. Table No. 4.

After 12 months follow up period none of our patients get recurrence of the cyst.

Table No.4 clinical improvement.

Symptom	**No.**	**Clinical improvement**	**%**
Dull Pain	20	16	80
Acute renal colic	2	2	100
Hypertension	2	2	100
Dilated pelvicaliceal system	6	5	84.4
Total	30	25	84.4

Discussion

Renal cysts are mostly asymptomatic and only rarely can regress spontaneously[12]. Large or multiple cysts may become clinically evident because of the compression of the renal pelvis or adjacent organs. Symptoms include abdominal discomfort or pain, hypertension secondary to vascular compression, and, rarely, renal failure[13]. Only symptomatic cysts, larger than 10 cm, are usually treated.

Several techniques have been proposed for the treatment of symptomatic simple renal cyst[14].

Open surgical decompression of renal cysts was first reported by Rovsing in 1911[14]. Twenty years later[15-17], several reports showed that surgical deroofing of large renal cysts seemed to benefit preservation of the renal parenchyma and control pain. While this modality has been popular, high costs and morbidity associated with open surgery have speeded up the development of less-invasive therapeutic alternatives.[18]

Nowadays, the laparoscopic approach is regarded as the treatment of choice in patients with symptomatic cysts with success rates exceeding 90%.[23]

Nearly all studies of the laparoscopic approach have demonstrated great satisfaction compared to other modalities in terms of efficacy, minimal complications, operative time, minimal blood loss, hospital stay, convalescence, and cosmoses.[24]

Recent advancements in laparoscopic instruments have further simplified procedures, and laparoscopic cyst ablation procedures have been refined and are performed widespread.(24)

Our study showed that symptom control was 84.4 %, (4)patients continue having dull loin pain and one patient getting increment in hydronephrosis) after 12 months follow up period. As mentioned the persistent loin pain is mostly unrelated to the cyst and could be musculoskeletal in origin, the patient that had got increased hydronephrosis was due to prolong pressure on the pelvicaliceal system causing fibrosis and obstruction.

Our results were lower than that obtained by Hulbert J C[20] who found that all 7 patients treated with laparoscopic deroofing were pain-free at a mean follow-up of 18 months.

In another studies done by Shiraishi K, et al, for laparoscopic deroofing in patients with symptomatic simple renal cysts (155 patients in total), the proportion of patients who were symptom-free ranged from 91% (41/45) after a mean follow-up of 52 months to 100% (20/20) after a mean follow-up of 6 months. [22]

The present study showed that the rate of cyst recurrence was 0 %, this was comparable to another study done byAtug F, et al who reporteda rate of cyst recurrence as 0% (0/13) after 6 months, whereas Shiraishi K, et alfound rate of recurrence of 13% (3/23) after 34 months, this higher recurrence rate may be due to longer period of follow up.

Our study reported no major intra or postoperative complications apart of 2 cases (6.6 %) of prolonged ileus that were managed conservatively.

Dunn MD,reported rate ofhaemorrhage(4%), prolonged ileus(11%),wound infection in 8% of patients and urine leakage in 4%.[24]

The results of present study regarding hospital stay, oral feeding and drain removal were comparable to a study done by Dunn MD. [24]

Conclusions

Laparoscopic decortication of large simple renal cysts is an efficacious, safe and less invasive method of treatment and is recommended as a primary treatment for symptomatic simple renal cysts.

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