

Laparoscopic treatment of symptomatic renal cysts in overweight patients at Ibadan: an initial experience

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Abstract

Background: Symptomatic renal cysts are eminently suitable for treatment through laparoscopic approach. We report our initial experience with the laparoscopic treatment of symptomatic renal cysts in overweight patients at Ibadan.

Results: Five patients were treated between June 2015 and April 2016 comprising of 3 males and 2 females. The mean age was 61 (age range, 40-75) years. The mean body mass index was 29.9 (range 25.5-31.1) kg/m². Four of the five patients presented with loin pain. Three patients were hypertensive; one had peptic ulcer disease and another diabetes with prostate cancer. Abdominal ultrasound and CT scan showed thin-walled cortical cysts, with sizes varying from 35cc to 380cc. Four cysts were unilateral, located in the left kidney while a patient had bilateral cysts. The mean operating time was 222 minutes (range 180-310 minutes). The estimated blood loss was 20-100mls. The five patients had laparoscopic transperitoneal deroofing and excision of the renal cortical cysts. The postoperative period was uneventful and all were discharged on the second day after surgery. The median period of follow up was 14 months (range 8-18 months) and these patients have remained asymptomatic with no radiological evidence of persistence of cysts.

Conclusion: Laparoscopic deroofing and excision of simple renal cyst in overweight patients is feasible and safe in our environment.

Keywords: symptomatic renal cyst, overweight, laparoscopic deroofing and excision, initial experience, Ibadan, Nigeria.

Résumé

Contexte: Les kystes rénaux symptomatiques sont éminemment convenables au traitement par la technique de laparoscopie. Nous rapportons notre expérience initiale avec le traitement par laparoscopie des kystes rénaux symptomatiques chez les patients en surpoids à Ibadan.

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Résultats : Cinq patients ont été traités entre juin 2015 et avril 2016 comprenant 3 hommes et 2 femmes. L'âge moyen était de 61 ans (tranche d'âge, 40-75 ans). L'indice de masse corporelle moyen était de 29,9 (intervalle 25,5-31,1) kg/m². Quatre des cinq patients présentaient avec une douleur lombaire. Trois patients étaient hypertendus; un avait un ulcère gastroduodénal et un autre diabétique avec un cancer de la prostate. L'échographie abdominale et la scanographie ont montré des kystes corticaux à parois minces, avec des tailles variant de 35cc à 380cc. Quatre kystes étaient unilatéraux, situés dans le rein gauche alors qu'un patient avait des kystes bilatéraux. La durée moyenne de fonctionnement était de 222 minutes (intervalle 180-310 minutes). La perte de sang estimée était de 20 à 100 ml. Les cinq patients ont été traités par la découverte de laparoscopie transpéritonéale et l'excision des kystes corticaux rénaux. La période postopératoire s'est déroulée sans incident et tous ont été libérés le deuxième jour après la chirurgie. La période médiane de suivi était de 14 mois (intervalle 8-18 mois) et ces patients sont restés asymptomatiques sans preuve radiologique de persistance des kystes.

Conclusion : La découverte de laparoscopie et l'excision du kyste rénal simple chez les patients en surpoids sont faisables et sécuritaires dans notre environnement.

Mots - clés : kyste rénal symptomatique, surpoids, découverte de laparoscopie et excision, expérience initiale, Ibadan, Nigeria.

Introduction

The availability of diagnostic imaging facilities such as abdominal ultrasonography and computed tomography (CT) scan have increased the detection rate of asymptomatic renal cysts [1]. Renal cysts are commonly seen in individuals above the age of 50 years and in those with background hypertension and significant history of cigarette smoking. Renal cysts are classified as congenital or hereditary. They may be solitary, multiple, unilateral in three-quarter or bilateral in one-third of cases [1,2].

In 1986, Bosniak classified renal cysts based on the thickness of the wall as thin or thick, the presence of septa, echogenicity or contrast enhancement of the content of the cysts. These

characteristics are seen on CT scan and by extension on abdominal ultrasound. These cysts are classified into four main categories with a further subdivision of category II into II and III^F, where III^F has a 5% chance of underlying malignancy [3,4]. The asymptomatic renal cysts do not require surgical intervention because they grow at a rate of 3.2% and increase in cyst size of 1.6mm per year [1]. Hence, they are usually observed with serial imaging studies [1,4]. However, the large size renal cysts, may present with flank pain in addition they may rupture spontaneously or from external trauma, may be infected or may present with hypertension [1,2]. Thus, necessitating intervention by either Ultrasound or CT-guided aspiration with or without injection of sclerosing agents [5,6,7,8] Alternatively, the symptomatic or complicated simple renal cysts can be treated by surgical deroofting, unroofing, decortication or excision through open surgical approach or laparoscopy [2,5,9,10].

We present our initial experience with the laparoscopic treatment of symptomatic simple renal cysts at a major University Teaching Hospital in Nigeria.

Materials and methods

This is a prospective collection of data of 5 patients with symptomatic renal cysts between June 2015 and April 2016.

The demographic data which include sex, body mass index and the clinical features of these patients were collected. The abdominal ultrasound and computerized tomographic features were also reviewed. The intraoperative findings, estimated blood loss, the duration of surgery and the subjective outcome of surgery based on relief of symptoms were analyzed. All the patients had transperitoneal laparoscopic deroofting and excision of renal cysts. The aspirated cystic fluids and excised cystic wall were sent for cytology and histological assessment. All the patients were discharge on the second day after laparoscopic surgery.

Operative Technique

The laparoscopic access was obtained by using the "Direct trocar technique". The 10mm trocar was inserted through the periumbilical opening and subsequently the carbon dioxide insufflator was attached with the pneumoperitoneum increased to 15-18mmHg at a flow rate of 500-1000ml/second. The peritoneum was thereafter inspected for intraperitoneal injury. Other secondary ports were inserted under direct visualization. Through these ports, the ligament of Toldt was identified, incised,

and the descending colon was mobilized medially. The renal cyst was then identified, grasped dissected with Maryland grasper and laparoscopic suction nozzle. The cyst was incised, the content aspirated and aspirate sent for cytology. The cyst wall was then excised with cautery and sent for histological analysis. This was the procedure performed for all the unilateral cyst as well as the bilateral cysts.

Results

There were 3 males and 2 females. The mean age was 61 (age range 40-75) years. All the patients were over-weight with an average body mass index (BMI) 29.9 (range 25.5 – 31.1) kg/m² (Table 1). The complete blood count, serum electrolyte, urea and creatinine were all within normal limits. Four patients presented with recurrent or intermittent left loin pain and one had cough, chest pain and fever (table 2) The co-morbid conditions in the patients were hypertension in 3 patients, peptic ulcer disease and both diabetes mellitus and prostate cancer in 1 in patient each. The abdominal ultrasound and CT scan (figure 1) showed thin-walled cortical cysts with sizes varying from 35cc to 293.7cc. Four patients had unilateral renal cyst while one had multiple bilateral renal cysts.

Tables 1: Demography of patients with symptomatic renal cysts in Ibadan

Serial No.	age (years)	sex	BMI (kg/m ²)
1	75	female (F)	30.2
2	55	female (F)	27.4
3	40	male (M)	31.1
4	75	male (M)	30.9
5	60	male (M)	25.5
	61 (40-75)	2F/3M	29.9 (25.5-31.1)

BMI – body mass index

The mean operating time was 222 minutes (range 180-310). The estimated blood loss was 20-100mls. All five patients had transperitoneal laparoscopic deroofting and excision of the renal cortical cysts (figures 2 and 3). There were no cytologic and histologic evidence of malignancy in any of the aspirate or excised cyst. The postoperative period was uneventful and all were discharged on the second day after surgery. They were asymptomatic and ultrasound revealed absent cysts at median period of 14 (8-18) months postoperatively.

Tables 2. The clinical and radiological features of patients with symptomatic renal cysts in Ibadan

Serial No	presentation	comorbidity	location of cyst	Bosniak Classification (CT scan/USS)
1.	left loin pain	hypertension	LURP	I
2.	left loin pain	hypertension	LMRP	I
3.	Rec. left loin pain	peptic ulcer disease	LMRP	I
4.	fever-1/12, cough-2/52, left lower chest pain	hypertension	LURP	II
5.	bilateral loin pain	diabetes / prostate cancer	BU-LRP	I

LURP - left upper renal pole, LMRP - left middle renal portion, BU-LRP - both upper and lower renal poles, USS - ultrasound, CT - computerized tomography

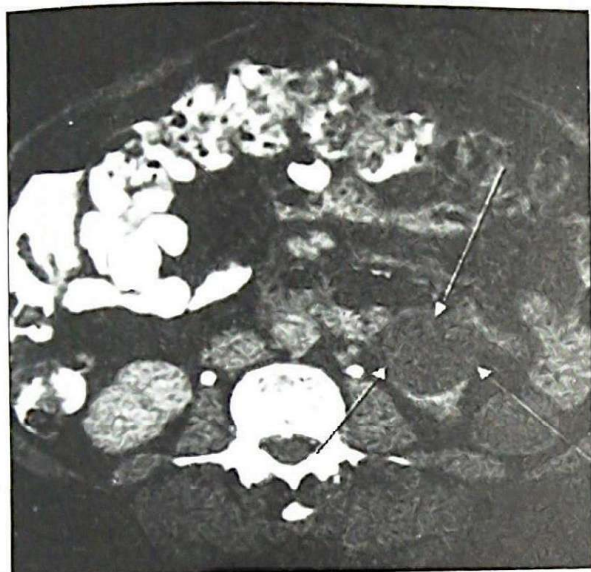


Fig. 1: Transverse CT section showing left upper pole renal cyst surrounded by white arrows.

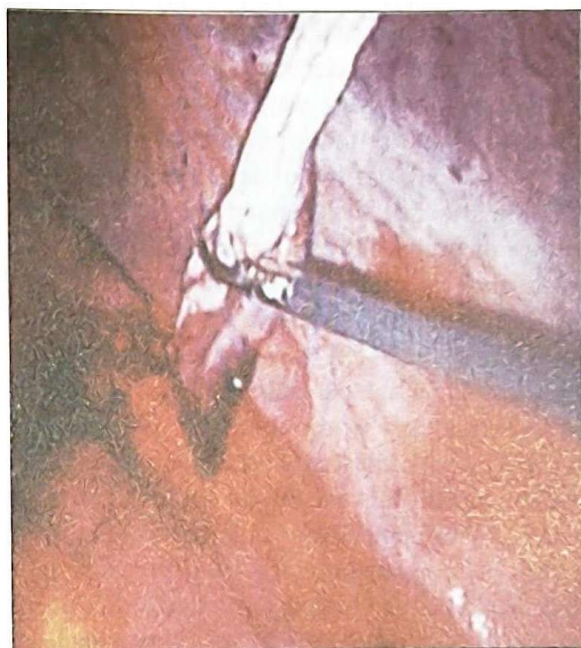


Fig. 3: Laparoscopic excision of renal cyst wall



Fig. 2: Operative deroofing and aspiration of symptomatic left renal cyst

One of the female had organized haematoma at the primary trocar site that resolved 4 weeks after surgery. The other four patients resumed work a week after discharge.

Discussion

Renal cysts are commonly seen with increasing age after 50 years of age as seen in majority of patients in this series [2]. Majority of patients with renal cysts have flank pain and hypertension, as seen in 60% of patients in this study. [2] Similarly 80% of patients often present with unilateral and solitary renal cyst as observed in this series [2].

Preoperative abdominal ultrasound and CT scans were very instrumental in characterizing the symptomatic renal cysts [1-3,6]. In this series, 4 patients had Bosniak type I and one was type II. Laparoscopic renal surgery is safe in obese patient though associated with prolong operation time with minimal complication rate and minimal perioperative blood loss [11].

The first line treatment for small symptomatic renal cyst is either ultrasound guided or CT/MRI guided aspiration with or without sclerotherapy

Table 3: Characteristics of laparoscopic surgery

Serial No.	Cyst-shape, wall/size (cc)	EBL (mLs)	Operation time(min)	Procedure
1Y	round, thin-walled, (33.9)	80	200	LDE
2Y	round, thin-walled, (293.7)	80	180	LDE
3Y	round, thin-walled, (68.7)	50	225	LDE
4Y	round, enhanced wall, (380)	20	195	LDE
5Y	multiple round, thin-wall(30-31.9)	100	310	LDE
Mean		66(20-100)	222(180-310)	

EBL – estimated blood loss, LDE – laparoscopic deroofing/excision, Y - discharged 2nd day after surgery

[2,6,7]. Ali *et al* [8], reported symptomatic success in 93.4% of patients and 2% had failed ultrasound-guided percutaneous sclerotherapy for symptomatic cyst because the cysts were greater than 10cm. Skolarikos *et al* [6], in their comprehensive review, found that only 2-4% of renal cysts become symptomatic due to haemorrhage, infection or rupture of cysts. Patients treated with sclerosing agents such as ethanol may have pain, fever and alcohol intoxication leading to shock.

Bas *et al.* [12], reported that laparoscopic decortication for symptomatic renal cyst had a high success rate, low recurrence rate and minimal morbidity when compared to percutaneous aspiration with a minimally high recurrence rate of 22.8% after a mean follow up period of 34.9 months. They also found 2% conversion rate from laparoscopic decortication due to bleeding or adhesions [12]. All patients in this study had their procedures completed laparoscopically. Farhan [13], reported a 90.9% symptomatic and radiographic success rate in their series after a median follow up of 12 (range 6-18) months and mean operation time of 100 (80-120) minutes. Though our follow up period was comparable to Farhan, our operation time was double. This may be explained by our early learning curve for laparoscopy and we do hope to report shorter periods in subsequent update.

Patients with symptomatic renal cyst often present with pain, hypertension and pressure effect in this series as cough and chest pain due to the large size of the renal cyst. In our series, all the patients had renal cysts successfully deroofed and excised through laparoscopic transperitoneal approach. In patients with infected cysts, retroperitoneal approach is preferred for large symptomatic renal cysts because it ensures complete excision of the cysts. [9-14] In this series, all the patients had 100% symptomatic relief and 80% radiographic success. One of 5 patients (20%) developed a new cyst at 6 months

postoperative that is consistent with Bas *et al* [12], findings of development of new renal cysts in 5 of 149 patients who had Laparoscopic decortication of symptomatic renal cyst.

In conclusion, transperitoneal laparoscopic deroofing and excision of symptomatic renal cyst is feasible, safe and effective in our environment. The advantages are reduction in duration of admission, early return to work. One of the challenges was the long operation time which can be added to learning curve and which should reduce with more experience.

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