

## Retroperitoneoscopic decortications of renal cyst: A case series in Ethiopia

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### ABSTRACT

The simple renal cysts have an incidence of about 10% in the general population. Renal cysts require surgical treatment when they are symptomatic. Good results with the retro-peritoneoscopic decortication of renal cysts were reported. We intend to present our experience with retroperitoneoscopic surgical management of symptomatic renal cysts. From June, 2016 to December, 2016, data from 14 patients who underwent retro-peritoneoscopic decortication of renal cyst was summarized. All procedures were carried out by one surgical team using a retroperitoneal approach. The main symptom was flank pain. Ultrasonography and Computed Tomography was done on all cases and the Bosniak classifications were 10 to I, 2 to II and 2 to IIF. The average size of the cysts was 9.2 cm (6 to 14 cm). The average surgery time was 71 min (50 to 115 min). Malignancy (clear cell renal carcinoma) was diagnosed in one case (Bosniak II F). It was difficult to continue the procedure in one of the cases, because the patient was obese with multiple varicosities that bleed easily. For the 13 patients, the post-operative hospital stay was one day. Open surgery was done for the obese patient. With a short hospital stay, the patients were free of renal cyst symptoms and recurrence. Retroperitoneoscopic decortication is an effective, safe and satisfactory procedure as a treatment option in terms of morbidity, operating time, complications and blood loss in the management of symptomatic renal cysts.

**Keywords:** Retro-peritoneoscopic decortications, renal cyst.

### INTRODUCTION

Simple renal cyst is a relatively common non-neoplastic disease of the renal parenchyma with a prevalence of about 10% in the general population. The prevalence increases with age and reaches 30% in patients older than 40 years (Abbaszadeh et al., 2008; Wein et al., 2007; Ozcan et al., 2015).

The etiology is unknown and are often diagnosed in the course of a study for other diseases and do not require treatment. Symptomatic flank pain is the most common presentation (Abbaszadeh et al., 2008; Wein et al., 2007; Okeke et al., 2003; Ozcan et al., 2015). The common signs of complications are hypertension, infection, upper urinary tract obstruction, hematuria and renal failure. For such conditions, surgical treatment is necessary.

Benign and malignant diseases of the kidney are always treated by open surgery (retro or trans-peritoneal) until the introduction of the minimal access surgery in urology with the benefits that it provides to the patient. The first report of laparoscopic decortication of renal cyst was in 1992. Minimal access surgical techniques favored the

treatment of simple renal cysts (puncture, aspiration and ultrasound or fluoroscopy guided sclerosis), but the possibility of recurrence was later reported (Wein et al., 2007; Okeke et al., 2003).

The reported success rate of laparoscopic decortication is 90 to 100% (Abbaszadeh et al., 2008; Wein et al., 2007; Okeke et al., 2003). Laparoscopic decortications are equally effective to open surgical resection of the cyst (Abbaszadeh et al., 2008; Wein et al., 2007). In Ethiopia, the retro-peritoneoscopic decortication of renal cyst is introduced by our team as a treatment option for renal cyst. In this research, results are presented in a series of fourteen (14) patients.

### MATERIALS AND METHODS

St. Paul's Millennium Medical College, Addis Ababa, Ethiopia is one of the largest medical centers around the country, with a lot of influx of surgical patients that

**Table 1:** SPHMMC June to December, 2016. Patients with renal cysts operated for retroperitoneoscopic.

ID	Age	Sex	Localization	Bosniak	Size (cm)	Surgical time (mint)	Blood loss
534767	50	F	RRC upper and ant pole	Bosniak I	6.5	80	Not bleeding
518239	40	F	LRC posteromedial pole	Bosniak I	10	75	Not bleeding
518549	60	M	RRC lower pole	Bosniak I	7 × 8	50	Not bleeding
500301	50	M	LRC upper and ant pole	Bosniak II	11.4 × 10.3	115	Not bleeding
502084	58	M	RRC lower pole	Bosniak I	8 × 8	50	Not bleeding
549852	40	F	2 LRC posteromedial pole	Bosniak I	6.2 x 4.4	90	Not bleeding
578134	65	M	RRC anteroinferior pole	Bosniak II	8.1 × 6	60	Not bleeding
246021	48	M	RRC upper and ant pole	Bosniak I	14.1	50	Not bleeding
509423	53	F	RRC lower pole	Bosniak I	6.5 × 5.3	90	Not bleeding
530467	48	F	RRC upper and ant pole near de pelvis renal	Bosniak IIF	6.2 × 7.1	75	Not bleeding
539890	66	M	2 LRC posteromedial pole	Bosniak I	6.3 × 4.7	60	Not bleeding
575204	52	M	RRC upper and ant pole	Bosniak IIF	10.2 × 8.6	75	Not bleeding
557456	58	F	LRC lower pole	Bosniak I	6.5	75	80 ml
534767	50	M	RRC anteroinferior pole	Bosniak I	10	80	Not bleeding

benefited from the introduction of minimally invasive surgical techniques. To date, one gastroenterologist only carried out few laparoscopic cholecystectomies. The department of urology was incorporated into the treatment of different diseases of the urinary tract techniques such as Laparoscopy, high and low Endourology and EWSL with excellent acceptance. From June, 2016 to December, 2016 fourteen (14) patients with the diagnosis of symptomatic renal cyst were treated in the hospital. Ultrasonography and Computed Tomography (CT) scan was done for all cases and Bosniak classification considered.

All procedures were performed by the same team of two Urosurgeons. Patients were informed in details about the advantages and disadvantages including possible conversion to open surgery of retro-peritoneoscopic surgery. Written informed surgical consent was signed by each patient.

Under general anesthesia and classic lumbotomy position, the patients were operated following an imaginary lumbotomy line. The procedures were performed by creating three ports with retroneumoperitoneo. For the first port, an incision of 1 cm sub-costal and anterior to the last rib was made and dissection done with Kelly artery until the retroperitoneal space was reached, thereafter, digital dissection of the peritoneum was done and Gaur's balloon placed in the retroperitoneal space. The balloon was inflated with 200 ml of normal saline to get enough retroperitoneal space.

Subsequently, the first 10 mm trocar was inserted in the space and through it 0° telescope was placed which initiated the insufflation of CO<sub>2</sub> at a pressure of 15 mm Hg. Two ports were created and 5 mm trocars inserted under direct vision, following the imaginary line, one anterior (abdominal) and posterior (costo-muscular). The Gerota's

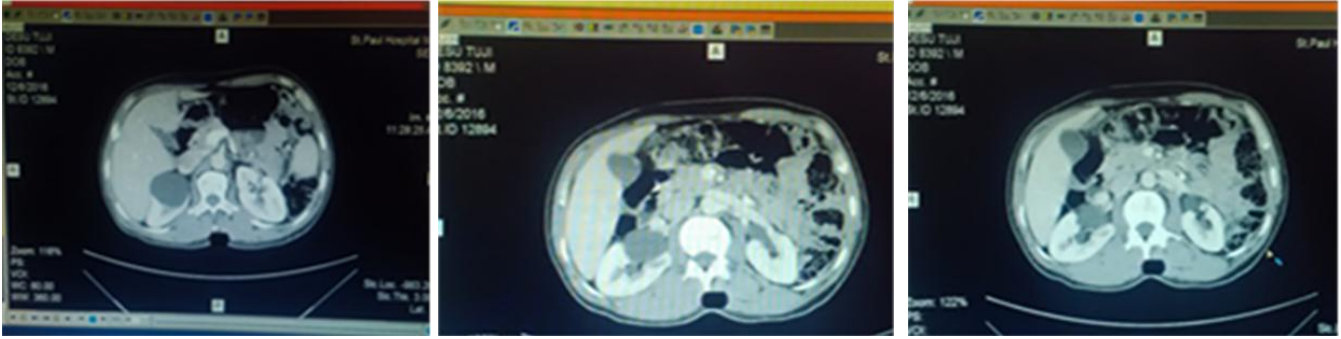
fascia was opened using grasping-forceps and dissector to identify the kidney and the cyst. Then, the cyst was opened, aspirated and decortications performed with scissors or hook using monopolar electro-surgical unit. Finally, homeostasis of the edges was done and drainage inserted when needed. There was no need for urethral catheter insertion in all the patients. Specimens were sent to the pathology unit for histopathologic examination. All patients were operated through a retroperitoneal approach.

The procedure and the outcomes were documented on each patients' medical record and a summary created by the researchers using Microsoft Excel, 2010 and key variables captured. Description of the main findings was done using excel and the procedures summarized using the patients records as the sources.

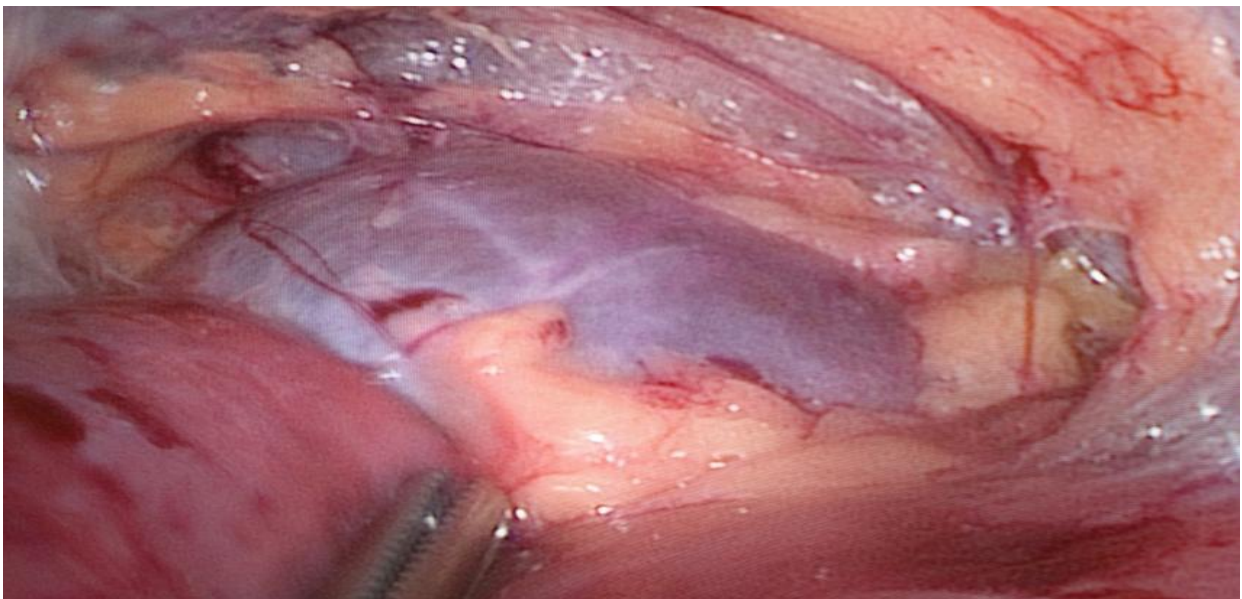
## RESULTS

From June, 2016 to December, 2016, fourteen patients (6 of which are females) presented with symptomatic renal cyst agreed to undergo the retro-peritoneoscopic decortication. Table 1 summarizes the key demographic characteristics and the intra-procedure and post-procedure findings.

As seen in Table 1, the mean age was 52 years (40 to 65). We found that in 50% of the patients there was relationship between the location of the cyst and the intensity of the pain (Figure 1). Patients with renal cysts located at the anterior part of the kidney had more pain than those located in other parts of the kidney (Figures 2 and 3). No direct relation between the pain and the volume of the cyst was observed. A single cyst was found in 12 patients and two cysts in 2 patients; the locations were



**Figure 1:** CT: Small kidney cysts near the renal pedicle causing slight signs of compression of the excreting cavities. The Bosniak classification was 10 to I, 2 to II and 2 to IIF.



**Figure 2:** Right Retroperitoneoscopy: Anterior and medial right renal cyst.

anterosuperior pole in 5 cases, posteromedial in 3, anteroinferior in 2 and inferior pole in 4 patients. The right renal cysts were predominant (nine patients). The mean size of the cysts was 8.4 cm (the smallest being 6 cm and the largest being 14 cm). The mean surgery time was 73.2 min (50 to 115) (Figure 2).

There was difficulty in continuing with the procedure for one patient who was obese with multiple abdominal walls of fat and varicose veins on the lower extremities. While we were opening the Gerota's fascia multiple varicose which bled easily was found and there was difficulty in locating the kidney. The procedure was abandoned and converted to open surgery. Taking the 14 patients, the feasibility of retroperitoneoscopic cyst decortication was 13/14 (92.9%). Success was achieved in all 13 patients for whom the procedure was fully executed.

The recorded blood loss was minimal (< 20 ml) as judged by the surgeons for 12/13 (92%) only one patient

had a blood loss of 80 ml. The hospital stay was two days in 13 patients and three days in one patient for whom open surgery was done. At discharge, patients were given appointments to come back a week and 2 weeks later and all returned to their routine work activity on the fifteenth day of the surgery. At month 6, all the patients were asymptomatic and free of recurrence.

Histological examinations were benign in all of the 13 specimens and malignancy - clear cell renal carcinoma was diagnosed in one of the cases (Bosniak IIF). Open radical nephrectomy was performed for this patient and lesion found near the renal pedicle.

## DISCUSSION

Use of minimal surgery for management of symptomatic renal cyst is extremely effective with minimal



**Figure 3:** Right Retroperitoneoscopy: Cavity of renal cyst cleaned after decortication.

complications and reduced hospital stay. The surgical decision in the presence of renal cyst is given by the clinical manifestations. Flank pain is the most common symptom that forces the patient to get medical attention. The use of imaging techniques (US and CT scan) in the study of different pathologies resulted in an increase in the incidental diagnosis of renal cysts (Okeke et al., 2003; Ozcan et al., 2015; Rosas-Navaa et al., 2014). All of our patients had symptomatic renal cysts.

Ultrasound as a first imaging study allows defining its presence and classification (simple renal cyst or complex). In the presence of complex renal cyst, CT scan should follow in order to do Bosniak classification. Ozcan et al. (2015) and Rosas-Navaa et al. (2014) prefer its indication to accurately define the characteristics of the cyst when they are very symptomatic (number, size, location, relationship with the renal cavities and Bosniak classification) and decide therapeutic options including needle aspiration, sclerotherapy (Okeke et al., 2003) and laparoscopic to retroperitoneoscopic decortication. Derouich et al. (2007) indicated CT scan to four patients (33%) of a series of 12 cases treated with Lumboscopic decortication.

Graumann et al. (2015) compared the diagnostic accuracy of Magnetic Resonance Imaging (MR), Contrast-Enhanced Ultrasonography (CEUS) and CT scan according to the Bosniak classification in the complex renal cyst. In the prospective study carried out for 16 months, 46 complex renal cysts was found and CT performed from this 27 cases were BII, six BIIF, seven BIII and six BIV. By CEUS, only forty-three cysts were diagnosed and forty-one lesions were by MRI. Pathologic correlation with CT revealed four malignant and two benign lesions in six cases. The authors concluded in the comparison of three

imaging techniques that CT scan should remain the gold standard of the Bosniak classification. In our research, we performed a CT scan in all patients similar to criteria and this study was considered necessary for the correct classification of the cysts by other authors (Abbaszadeh et al., 2008; Ozcan et al., 2015; Rosas-Navaa et al., 2014).

Several decades ago, the benefits of minimal access techniques for the treatment of the urinary tract pathologies were reported. The transperitoneal or retroperitoneal decortications of renal cysts are attributed to higher success rate than other therapeutic modalities of minimum access (Percutaneous needle aspiration and sclerotherapy) (Abbaszadeh et al., 2008; Wein et al., 2007; Okeke et al., 2003). Comparative studies between the laparoscopic approach and retroperitoneal was published in the treatment of renal cysts and obtained equal rates of success with both techniques. The location of the cyst, the selected approach and the skill of the surgeon are decisive factors (Rosas-Navaa et al., 2014).

In the present study, except in the case where conversion is needed, the success rate of the technique was used and the disappearance of the symptoms and the non-recurrence in the short follow-up period was 100%. The ability of our surgical team has shown that cysts located on the anterior and upper part of the kidney can be treated by this technique.

Abbaszadeh et al. (2008) in a period of thirty-one months performed laparoscopic decortication in twenty-one (21) patients with symptomatic renal cyst. Complete disappearance of the symptoms and radiological recurrence was not seen in 16.6 months of follow-up; this is similar to the findings of this study. The hospital stay reported was  $1.9 \pm 1.1$  (range: 1 to 5) days. Mean operative time was  $58 \pm 15$  min (range: 35 to 90) and this was



slightly shorter than the time used; this could be related to longer time experience. Derouich et al. (2007) did not report intraoperative complications, however, the hospital stay was about three days which is considered to be prolonged for this type of surgical technique but in our case, the hospital stay was a third of what it is to the report of Derouich et al. (2007).

Shiraishi et al. (2006) in their retrospective study performed laparoscopic decortication in 36 patients for more than ten years. The aim of the present study was to evaluate the changes of cyst size after laparoscopic decortication and to provide insights into the surgical procedure and follow-up of the patients. The authors suggest that this is a safe procedure with satisfactory long-term and this is similar to what was observed in our patient population. They also found that the procedure was still challenging for peripelvic cysts. They used basically transabdominal approach but if the cysts were dorsal to the kidney they used a retroperitoneal approach (Abbaszadeh et al., 2008; Shiraishi et al., 2006), unlike our study where all were approached retroneumoperitoneoscopically and the cyst is located on any part of the kidney. Radiological evaluation should be done only in patients with symptoms during follow-up.

Ozcan et al. (2015) performed a retrospective and comparative study of laparoscopic transperitoneal and retroperitoneal approaches for the decortication of simple renal cysts in respect of safety, post-operative pain and clinical results. The study included 40 patients (28 males and 12 females). The transperitoneal approach was performed in 20 (20/40) patients and the retroperitoneal approach performed in 20 (20/40) patients. The surgical time between the two techniques was statistically significant being 51.5 min for the trans-peritoneal approach and 44.75 min for the retroperitoneal approach ( $P < 0.05$ ). When both methods were compared according to the location of the cysts that settled in the upper and middle poles, the duration of the operation was significantly shorter in the retroperitoneal approach than in the transperitoneal approach ( $P = 0.001$  and  $P = 0.02$ , respectively) and when it was determined in terms of time in the lower pole cysts, the difference between the two methods was not statistically significant ( $P = 0.148$ ). Significant less surgical time was reported with retroperitoneal approach when the location of the cysts was upper and middle poles in the trans-peritoneal approach ( $P = 0.001$  and  $p = 0.02$ , respectively). When the

cyst was located in the lower pole in terms of time, there were no statistically significant differences between the two methods ( $P = 0.148$ ). The post-operative pain was less by the retroperitoneal approach. This result was statistically significant ( $P < 0.05$ ). The clinical results and the safety were same for both approaches.

## Conclusions

The retroperitoneoscopic renal cyst decortication is feasible and safe and has effective approach with excellent results in terms of morbidity, operating time, complications, blood loss and return to day activity. A study that compares this approach with the traditional approaches is highly recommended.

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