

# Laparoscopic Transperitoneal Surgery for Adrenal Cysts

S Shivde, P Joshi, V Gorde, J Deuskar, D Kelkar

## Citation

S Shivde, P Joshi, V Gorde, J Deuskar, D Kelkar. *Laparoscopic Transperitoneal Surgery for Adrenal Cysts*. The Internet Journal of Surgery. 2007 Volume 17 Number 2.

## Abstract

### Introduction:

Adrenal cysts are uncommon lesions with an incidence ranging from 0.064% to 0.18 %. Adrenal cysts are detected more commonly in the present times due to widespread use of imaging modalities. We present our technique of laparoscopic adrenal cyst excision.

### Methods & Materials:

Two patients with large adrenal cysts underwent laparoscopic transperitoneal excision. The size of the cysts was 6cm x 8cm and 15cm x 16cm, respectively. The cysts were first aspirated through 5mm suction to provide more space for dissection.

### Results:

The cysts were completely removed. Operative time was 190 and 170 minutes. Blood loss was 100 and 70 ml. Hospital stay was 2 days for both patients. Pathological examination showed that they were epithelial adrenal cysts - a histopathological rarity.

### Conclusion:

Adrenal epithelial cysts are rarely encountered pathological entities. Laparoscopic dissection is a good treatment option for large adrenal cysts. Intracystic laparoscopic fluid aspiration helps in decreasing the size of cyst thus facilitating easy port placement, dissection and organ retrieval. This technique of meticulous aspiration of fluid is thus of immense help in laparoscopic surgery.

## INTRODUCTION

Adrenal cysts are uncommon lesions. They are usually asymptomatic or without a characteristic symptom. The incidence in autopsy studies ranges from 0.064% to 0.18% (1). With the widespread use of imaging modalities adrenal cysts are encountered more commonly than previously. We present our technique of laparoscopic adrenal cyst excision in two cases.

## PATIENTS AND METHODS

A 39-year-old male presented with a few days history of nonspecific loin pain and abdominal distention. On abdominal examination, no lump was palpable. Another patient, a 46-year-old male presented with a cyst, which was incidentally found by abdominal ultrasonography while he was being investigated for urinary tract infection (UTI). Routine laboratory tests and endocrine function tests were within the normal range for both patients. Ultrasonography (USG) showed a large clear cystic mass of 6 x 8cm at the upper pole of the right kidney in the first case and a cystic mass of 15 x 16cm at the upper pole of the right kidney in the second case (Figure 1).

## Figure 1

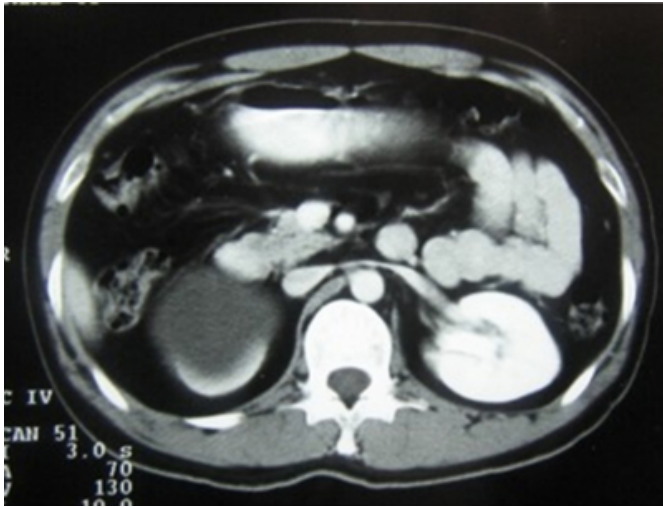
Figure 1: USG showing a cystic lesion



In both cases, axial CT image showed a huge thick-walled cystic mass in the retroperitoneum which was in close relationship with the head of the pancreas anteriorly, the liver posteriorly and the IVC medially (Figure 2).

**Figure 2**

Figure 2:CT scan showing a cystic mass in the retroperitoneum



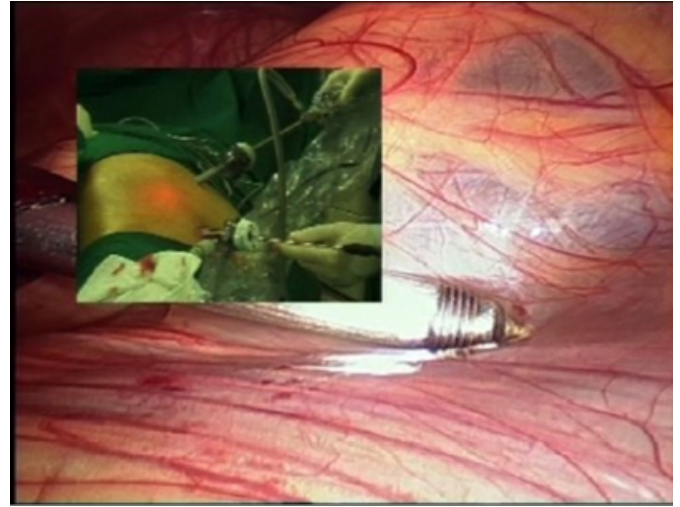
### OPERATIVE TECHNIQUE

The operation was done under general anesthesia by a transperitoneal approach. A gastric tube and a urinary catheter were placed and full left lateral decubitus position was chosen. The table was flexed and the kidney rest was raised to maximize the space between anterior iliac spine and inferior costal margin.

A pneumoperitoneum was created using a Veress needle. Four trocars were used. The first 10mm optical trocar was inserted in the anterior axillary line under the costal margin and a 30 degree laparoscope was introduced through this trocar. The second 10mm trocar was introduced caudally 5cm from the optical trocar, in the anterior axillary line. The pneumoperitoneum was maintained at 12mm of Mercury (Hg). Since the cysts were large, they were easily seen protruding below the liver margin. The cysts were punctured using monopolar cautery and the contents were sucked using a 5mm suction tip pushed through the most lateral trocar (Figure: 3).

**Figure 3**

Figure 3: Laparoscopic suction of cystic fluid Port placement



This action prior to the formal dissection facilitated the dissection by collapsing the cyst and creating space for instrument maneuverability. Two more 5mm trocars were introduced under direct vision. Both of them were placed under the costal margin, 7cm on either side of the optical trocar. The collapsed cyst wall was grasped and mobilized by incising the subhepatic peritoneum using a coagulating hook. An atraumatic liver retractor was introduced through the extreme left trocar for delicate cephalad retraction preventing any injury. Mobilization of liver helps in identifying the vena cava. The vena cava was dissected, exposing the renal vein and the main adrenal artery. The main adrenal vein was successfully controlled with Haem-o-lock™ clips and divided. Retraction of the gland caudally and laterally facilitated access to the arterial pedicle, which was clipped and divided. Caudal retraction helped to identify the superior adrenal artery, which was dissected, clipped and divided. Similarly, cephalad retraction helped to identify the inferior adrenal artery, which was clipped and divided. The remaining few attachments were carefully dissected using monopolar cautery. The specimen was grasped with an atraumatic grasper and introduced into an extraction bag. The extraction was done through the 10mm trocar opening. A drain was placed from the most lateral trocar after achieving haemostasis. Each 10mm trocar site was closed using absorbable suture.

### RESULTS

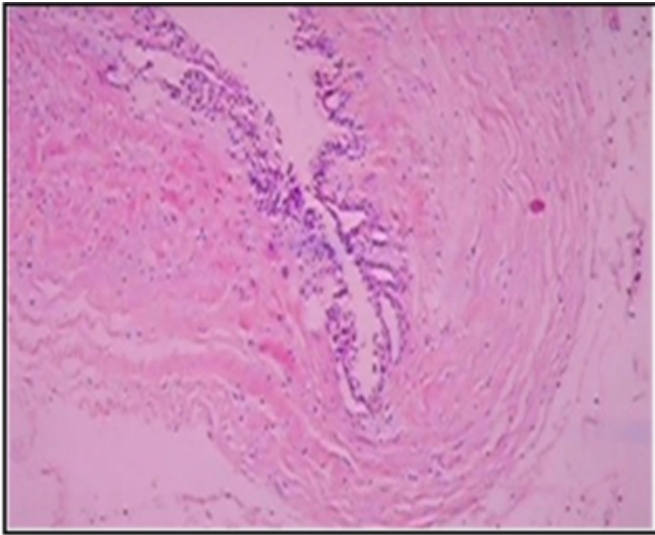
Both cases underwent laparoscopic cyst excision and the cysts were completely removed. Operative time was 190 and 170 minutes. Blood loss was 100 and 70ml with an average of 85ml. Drains were removed on the second postoperative

day. Hospital stay was 2 days for both patients. On follow-up after 2 weeks, the patients were without any symptoms.

Pathological examination showed the cysts to be epithelial adrenal cysts (Figures 4 & 5). Follow-up USG after 3 months was normal in both patients.

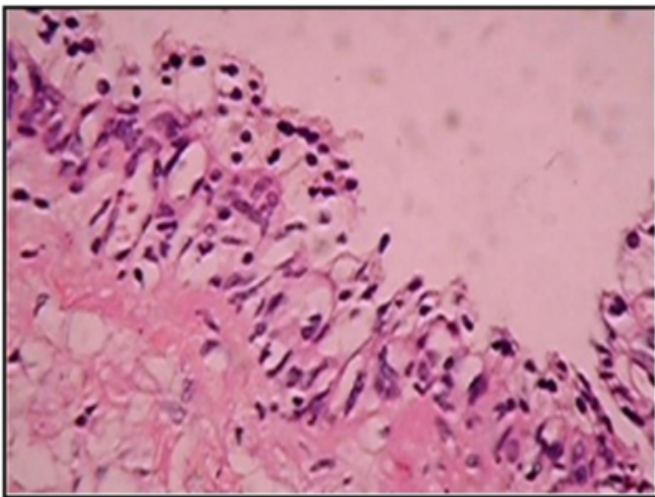
**Figure 4**

Figure 4: Epithelial adrenal cyst: Low power



**Figure 5**

Figure 5: Adrenal cyst: High power



### DISCUSSION

Adrenal cysts are rare though their true incidence is probably higher than reported. Adrenal cysts may occur at any age, but most of them are found in the 3rd through 4th decades of life. (2) Adrenal cysts vary greatly in size from microscopic to more than 50cm in diameter and some have been reported to contain many liters of fluid. (1) Small adrenal cysts are clinically silent, while cysts of large size can cause

displacement and compression of adjacent organs. (4) Smaller cysts are usually incidentally found during the evaluation of unrelated abdominal conditions. There is no predilection for the right or left gland. Literature review shows 8% incidence of bilateral adrenal cysts. All age groups are affected. There is a 2:1 female predominance. (4)

Traditionally, adrenal cysts have been divided into neoplastic and non-neoplastic groups. Non-neoplastic lesions are of four general categories: endothelial lined cysts (45%); pseudocysts (39%); cysts secondary to infectious agents such as echinococci and epithelial-lined or true adrenal cysts (9%). (2) Of these, endothelial-lined cysts and pseudocysts are most common and comprise approximately 90% of cases. Epithelial-lined true cysts are rare, and theoretically could be retention cysts (glandular), or arising from adrenal cortical adenoma and embryonal cysts. Epithelial cysts have true epithelial lining, which can be confirmed by special immunoperoxidase studies with antibodies to keratin. (3)

Laparoscopic adrenalectomy has emerged as the treatment of choice for benign functioning and non-functioning surgical adrenal disorders. (5) When compared with open adrenalectomy, laparoscopic adrenalectomy is associated with a shorter length of hospitalization, lower analgesic requirement, decreased convalescence, less operative blood loss, rapid dietary intake, superior cosmesis, and lower postoperative complication rates (6).

Various laparoscopic approaches have been reported to treat adrenal cysts using the transperitoneal and the retroperitoneal approach. Castillo et al. have described their experiences with transperitoneal laparoscopic cyst decortication and marsupialisation. (7) Both cases were treated with aspiration of the intracystic fluid followed by complete dissection of the cyst and removal.

### CONCLUSION

Adrenal epithelial cysts are rarely encountered pathological entities. Laparoscopic dissection is a good treatment option for large adrenal cysts. Intracystic laparoscopic fluid aspiration helps in three ways:

1. To decrease the size of the cyst thus creating free space for further port insertion & laparoscopic dissection.
2. The collapsed cyst wall can be grasped and used for traction facilitating dissection.
3. Decrease in size of the cyst helps easy organ

retrieval.

This technique of meticulous aspiration of fluid is thus of immense help in laparoscopic surgery. It avoids all the morbidity associated with large incision open surgery, thus facilitating early recovery. We strongly recommend this technique of laparoscopic surgery with fluid aspiration in patients with benign adrenal cysts.

### References

1. Kantharia SC, Chaubey A, Roy N, Cherian S. Case reports. Adrenal cyst - a case report. *Bombay Hospital Journal* 2007; 49: 373-7
2. Balani B, Kumar R, Patwari AK, Anand VK. Bilateral adrenal cysts in a newborn. *Indian Pediatrics* 2000; 37: 1370-1373
3. Vaughan ED Jr, Blumernfeld JD, Del Pizzo J, et al. *Campbells Urology*, ed. 8, WB Saunders Philadelphia 2002, pp. 3507-3569
4. Danza FM, De Marinis L, Mancini A, Valentini AL, Summaria V, Conte G, Camaioni M, Fiumara C. Adrenal gland cysts: Our experience. *Minerva Chir* 1993; 48: 1325-30
5. Gill IS. The case for laparoscopic adrenalectomy. *J Urol* 2001; 166: 429-436.
6. Brunt LM, Doherty GM, Norton JA, Soper NJ, Quasebarth MA, Moley JF. Laparoscopic adrenalectomy compared to open adrenalectomy for benign adrenal neoplasms. *J Am Coll Surg* 1996; 183: 1-10.
7. Castillo OA, Litvak JP, Kerkebe M et al. Laparoscopic management of symptomatic and large adrenal cysts. *J Urol* 2005; 173: 915

**Author Information**

**Subodh R. Shivde, MS, MCh(URO), FRCS(Edin), FRCS(Glasg), FEBU**

Consultant Uro-Onco-Surgeon, Department of Urology, Deenanath Mangeshkar Hospital

**Pankaj M. Joshi**

DNB Trainee, Department of Urology, Deenanath Mangeshkar Hospital

**Vaibhav Gorde**

DNB Trainee, Department of Urology, Deenanath Mangeshkar Hospital

**Jitendra Deuskar, MS**

Department of Surgery, Deenanath Mangeshkar Hospital

**Dhananjay Kelkar, MS**

Department of Surgery, Deenanath Mangeshkar Hospital