

## Case Report

# Adrenal sparing giant adrenal cyst excision by 3D laparoscopic approach: a case report

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### ABSTRACT

Adrenal cyst is rare clinical entity. Usually they are asymptomatic, non-functional, <10 cm in size and often discovered incidentally. We report a left adrenal cyst in 58-year-old woman measuring 23 cm in diameter, displacing left kidney infero-medially and pancreas anteriorly, because of its huge size. She presented with left flank pain over a 6-month period. Serial abdominal ultrasound and CT imaging revealed left suprarenal cystic mass of size 10 cm to begin with and gradually increased to size of 23 cm over period of 10 years when she became symptomatic. All laboratory and endocrine function tests were normal. 3D laparoscopic surgery done and cyst was completely removed with preservation of adrenal gland. Histopathological examination revealed a benign endothelial adrenal cyst. The postoperative course was uneventful and patient had no evidence of recurrence during follow-up. The giant adrenal cysts are relatively rare and represent great surgical challenge during resection.

**Keywords:** Adrenal gland, Giant adrenal cyst, 3Dlaparoscopy

## INTRODUCTION

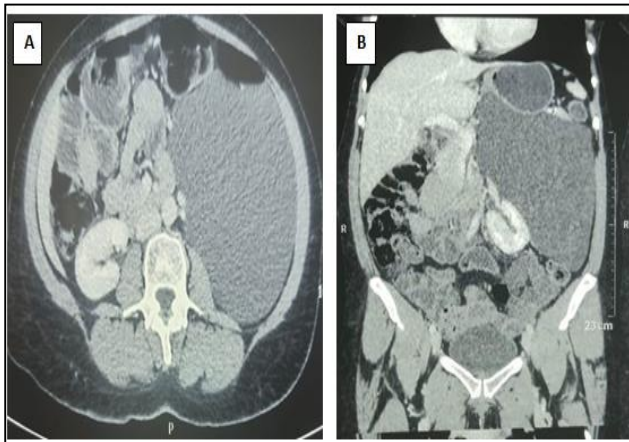
Adrenal cyst is rare cystic mass arising from adrenal gland and mostly remains asymptomatic and non-functional.<sup>1</sup> With widespread use of radiodiagnostic modalities (USG, CT, MRI) there is increase in incidence of incidental detection of adrenal cysts.<sup>1</sup> The surgical intervention needed in symptomatic cysts size more than 5 cm, functional, complication (infection, bleeding) and malignancy suspected cases.<sup>2</sup> Giant adrenal cyst need to be treated due to the huge size causing symptoms, compression and dense adhesions to adjacent organs. The treatment of choice is open or laparoscopic adrenal gland sparing cyst excision.<sup>2</sup> We report a case of giant adrenal cyst in a 58-year-old female who presented with upper abdominal pain which was managed with 3D laparoscopic cyst excision with preservation of adrenal gland. To the best of our knowledge, this is the largest adrenal cyst which has been treated with laparoscopy reported in the India.<sup>1</sup>

## CASE REPORT

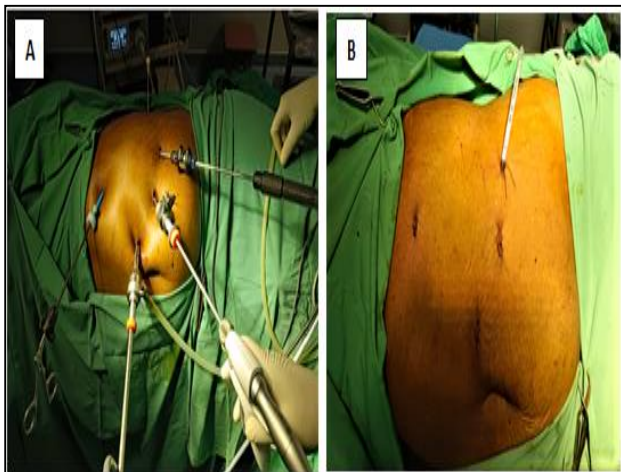
A 58-year-old Nigerian female patient (BMI-30 kg/m<sup>2</sup>) admitted with complaints of left abdominal pain since 6 months. On evaluation, abdominal CECT scan (Figure 1 A and B) showed cystic lesion of 16×14.2×23 cm (HU=19) without internal septations or calcification in left suprarenal area, abutting diaphragm and spleen. Pancreatic body and tail were displaced anteriorly with inferomedial displacement of left kidney towards the pelvis. Splenic vein seen along the anterosuperior aspect of cyst. Left renal hilum stretched along the inferomedial aspect of cystic lesion. Left adrenal gland not visualized separately from cystic lesion. She had history of incidental detection of left adrenal cyst of 9.2×10.2×10.5 cm size 10 years ago which increased up to the present size.

We proceeded with 3D laparoscopic transperitoneal left adrenal cyst excision using Covidien Viking 3DHD

vision system. Under general anaesthesia, patient in right lateral position. Four ports were placed (Figure 2A).

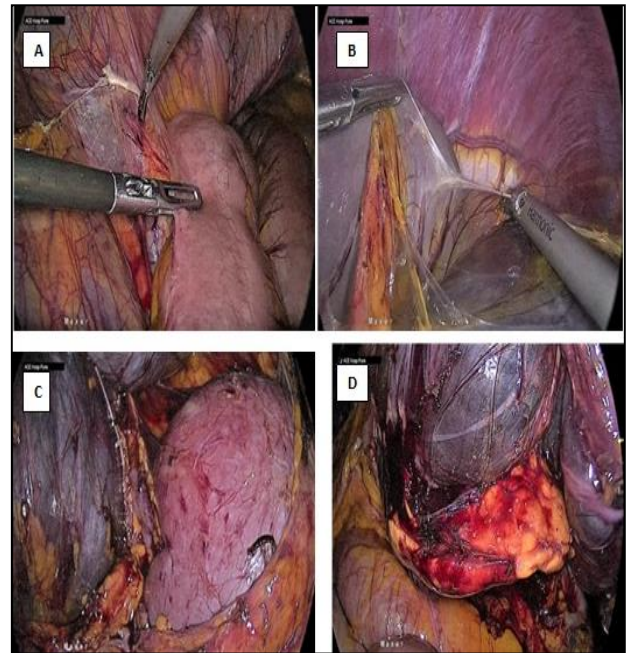


**Figure 1: CECT abdomen. Axial view showing unilocular cystic lesion and coronal view of left suprarenal lesion without calcification or internal septations.**



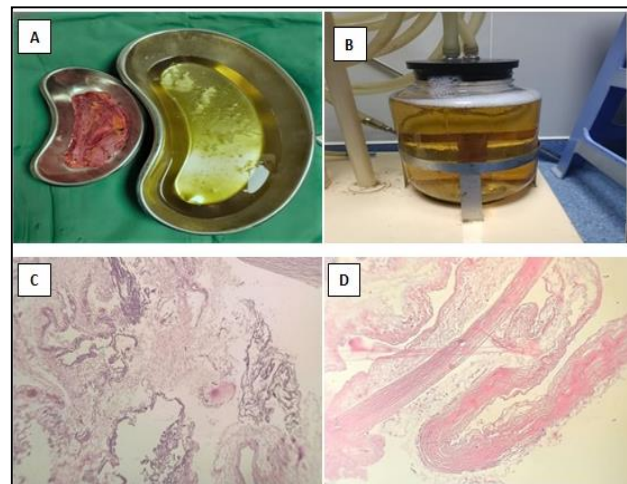
**Figure 2: Laparoscopic left adrenal cyst excision port placement and post operative trocar would closure with drain *in situ*.**

On dissection huge supra-renal cyst was seen in left renal fossa extending medially till midline and up to pelvic cavity inferiorly. Pericyclic dissection done in clear cut plane on medial and inferior aspect taking care not to rupture cyst cavity. Intra operative challenges were immense difficulty in the dissection due to huge cyst size, dense adhesions to spleen, splenic vein, tail of pancreas and sigmoid colon (Figure 3 A and B), 18Fr initial puncture needle used for controlled intermittent external aspiration which provided space for crucial dissection. The origin of cyst was from left adrenal gland with dense adhesion to it. Also, we got clear plane of dissection of cyst from adrenal gland, complete cyst was separated all around with safeguarding left adrenal gland. There were no attachments to the left kidney (Figure 3 C and D).



**Figure 3: Laparoscopic dissection. Cyst being dissected from sigmoid colon. Dissection to separate spleen and tail of pancreas. Cyst wall separate from left kidney and cyst separated with safe hoarding adrenal gland.**

The cyst was punctured and around 3 litre of straw coloured fluid aspirated (Figure 4B). The collapsed cystic wall retrieved in specimen bag through small incision (Figure 4A) and abdominal drain tube placed in left renal fossa (Figure 2B).



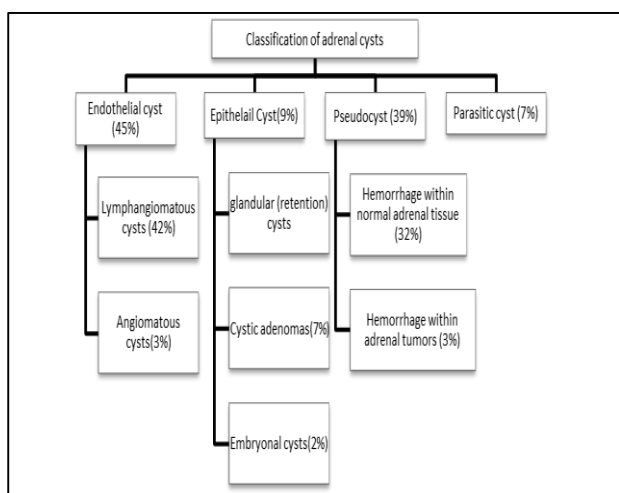
**Figure 4: Cyst wall specimen. Straw colored cyst fluid (~3 L), HPE-fibro fatty tissue bits with cyst line by cuboidal epithelial cells and HPE dilated congested vessels.**

The operative time was 115 minutes and blood loss was minimal. The postoperative period was uneventful, drain removed and patient was discharged on 5<sup>th</sup> post-operative day. Histopathological report showed benign endothelial cyst (Figure 4 C and D).

## DISCUSSION

In 1960, Griselius described first case of adrenal cyst during autopsy in 45-year-old man who died due to cyst rupture.<sup>1</sup> Their incidence in autopsy series is 0.064%-0.18%. It accounts for 1% to 22% of incidental adrenal lesions.<sup>5</sup> They can be diagnosed throughout life and as early as prenatal period. The peak age of incidence is between third and sixth decades of life with female: male ratio is 3:1.<sup>6</sup> Usually they are solitary, unilateral but bilateral cysts are reported upto 10% cases.<sup>4</sup> The cyst size ranges from several millimetres to >20 cm. Adrenal cyst is defined as 'Giant' when its greatest diameter is >10 cm.<sup>1</sup> However, giant cysts up to 45 cm in diameter have also been reported.<sup>1</sup>

Several medical conditions associated with adrenal cyst includes sepsis, birth injuries, trauma, toxemia of pregnancy, leukaemia, Cushing's syndrome, adrenal hypofunction, arterial hypertension, polycystic renal disease, Beckwith-Wiedemann syndrome, Klippel-Trenaunay-Weber syndrome, abdominal aortic aneurysm.<sup>8</sup> Four histological types have been described (Figure 5).<sup>6</sup>



**Figure 5: Classification of adrenal cyst.**

The majority of adrenal cysts are non-functioning, asymptomatic and manifest symptoms only after they reach a significant size or due to complications (infection, rupture or haemorrhage). In these circumstances, patient usually presents with flank or back pain, palpable mass and gastrointestinal disturbances like nausea, vomiting. Occasionally arterial hypertension is reported. The origin of adrenal cysts often difficult to distinguish from surrounding organs.<sup>8</sup>

During evaluation routine endocrinologic test should be performed to exclude active lesions. Due to relative rarity, no well-defined diagnostic criteria are established till now. The suggested radiographic diagnostic features are well defined, sharply demarcated mass with fluid attenuation without enhancement. Cyst with higher fluid

attenuation value >30 HU are attributed to haemorrhage and peripheral calcification (15% to 70%).<sup>8</sup>

The deciding factors for treatment are cyst related symptoms, functional status and incidental chances of malignancy. The European society of endocrinology states that follow up in cysts <4 cm size, metabolically silent lesion with benign radiographic features is not required.<sup>9</sup> Adrenal cysts that are heterogeneous, thick walled, size >5 cm and symptomatic warrants surgical excision. Complete cyst excision with preservation of adrenal gland is procedure of choice however; adrenalectomy may be required due to complexity. The minimally invasive laparoscopy has advantage of low morbidity, shorter hospital stays, less blood loss, rapid recovery and enhanced cosmesis. Obesity, huge tumour size, and challenging anatomical expansions are substantial hurdles in patients with giant cysts. Also, concerns of technical failure and long duration of surgery may arise. With the use of 3D laparoscopy there is improved resolution, depth perception, spatial awareness, proper hand-eye coordination, and easier surgical manipulation.<sup>10</sup> The crucial and complicated manoeuvres can be done faster and safer under 3D vision.<sup>10</sup> Our case was successfully addressed with 3D laparoscopy with precise dissection, sparing entire adrenal gland and with minimal blood loss and less operative time.

## CONCLUSION

Giant adrenal cyst always needs surgical management and should be attempted with minimal access surgery as far as possible. Availability of 3D laparoscopy makes possible to perform such complex surgeries with precise dissection.

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