

## Isolated Renal Hydatid Cyst: A Report of 2 Cases

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### ABSTRACT

Human echinococcosis remains a complex problem that affects several organs. Primary involvement of the kidney without the involvement of the liver and lungs is very rare. The treatment of a renal hydatid cyst usually requires intervention ranging from minimally invasive percutaneous aspiration techniques to laparoscopic and open techniques. Herein, we describe 2 cases of isolated renal hydatid cysts treated successfully by cyst excision, with open techniques without content spillage. They were treated with 400 mg of albendazole for 2 months. The patients showed no evidence of recurrence within their 2-year follow-up.

### INTRODUCTION

Hydatid disease is a cyclozoonotic parasitic infestation caused by the cestode echinococcus. Hydatid disease mainly (90%) affects the liver, as well as the lungs, and 10% the rest of the body. Renal involvement is about 2% of cases. Primary involvement of the kidney without the involvement of the liver and lungs is even more rare. We report 2 cases of primary renal hydatid disease and its management.

### CASE 1

A 55-year-old male patient presented with dull, aching right loin pain for 6 months. His physical examination was normal.

His urine examination was normal. An ultrasound of the abdomen revealed a well-defined hypoechoic lesion 14 cm by 10 cm. It involved the upper pole of the right kidney, with calcification and crumpled membranes in a dependent position, suggestive of hydatid disease. A contrast-enhanced computed tomogram (CECT) of the abdomen and pelvis revealed a large, well-defined, thin-walled cystic lesion with calcification, thin septations, and membranes in the upper pole. The right kidney and other viscera were normal (Figure 1). IgG antibodies (1.08) tested against hydatid disease came back positive. The patient was given a preoperative dosage of albendazole (400 mg) for 1 week. Cystic excision through the retroperitoneal right loin was planned. Cystic fluid was partially aspirated and povidone iodine solution was instilled (Figure 2). The cyst wall was excised

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Figure 1. A CT scan of the abdomen showing a large right renal hydatid cyst.

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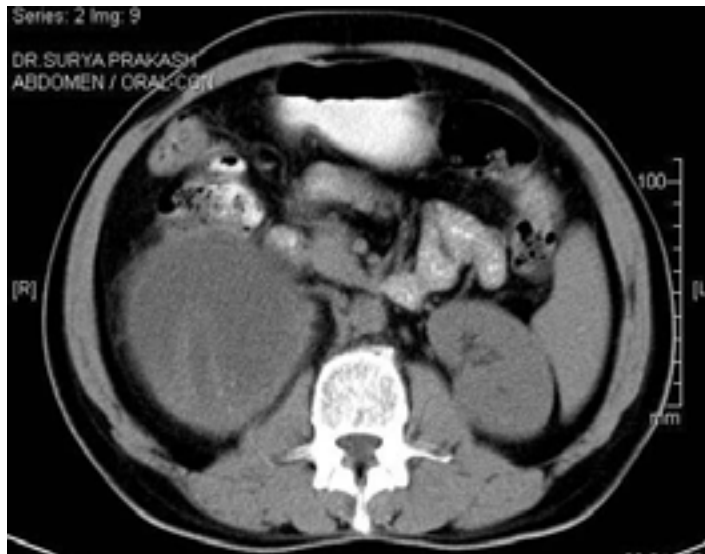
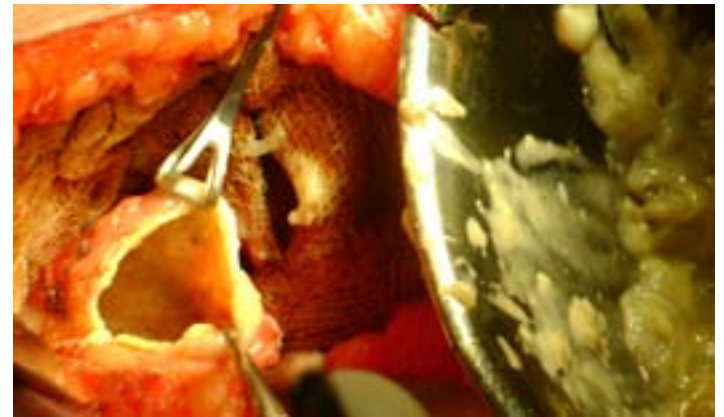


Figure 2. An intraoperative photograph showing an opened hydatid cyst wall after taking care for spillage.

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in toto (Figure 3). The postoperative period was uneventful. The patient was given 400 mg of albendazole for 2 months. A follow-up ultrasound was done at 3 months. A 1-year follow-up showed no recurrence.

## CASE 2

A 28-year-old woman presented with right loin pain for 4 months. Her physical examination was normal. An ultrasound of the abdomen revealed a well-defined swelling with cysts, as well as solid components. A CECT of the abdomen revealed a well-defined, heterogeneous, nonenhancing complex cyst involving the upper pole of the right kidney with dense calcification. Other viscera were normal on imaging (Figure 4). With a clinical suspicion of hydatid disease, exploration and cyst excision was planned. Intraoperatively, the field was protected with swabs soaked in povidone iodine. The cyst was incised and its content was composed of numerous daughter cysts appearing as though a bunch of grapes. The fluid-filled debris was evacuated. Total excision of the cyst wall was done. Histopathological examination confirmed renal hydatid disease. Her postoperative stay was uneventful, and the patient was discharged on a regimen of albendazole (400 mg a day

for 2 months). No recurrence of hydatid disease was observed within 2 years of follow-up.

## DISCUSSION

Echinococcosis is a worldwide zoonosis produced by the larval stage of the echinococcus tapeworm. The adult worm lives in the proximal small bowel of the definitive host (usually a domesticated dog). Eggs are released into the host's intestine and excreted in the feces. Humans may become intermediate hosts through contact with a definitive host, or through the ingestion of contaminated water or vegetables. In humans, hydatid disease involves the liver in approximately 75% of cases and the lung in 15%. Secondary involvement due to hematogenous dissemination may be seen in almost any anatomic location. Kidney involvement in echinococcosis is extremely rare (2 to 3% of cases), even in areas where hydatid disease is endemic [1]. This is because larvae that invade the gastrointestinal tract must first escape sequestration in the liver and, subsequently, the lungs. Only after these 2 defenses are passed, the larvae gain access to systemic circulation. They most commonly form a solitary mass in the renal cortex.

A cyst wall is divided into 3 distinct zones. The outermost adventitial layer consists of host fibroblasts that may become calcified. A middle laminated layer consists of hyaline that surrounds a third inner germinal layer. The core of this hydatid

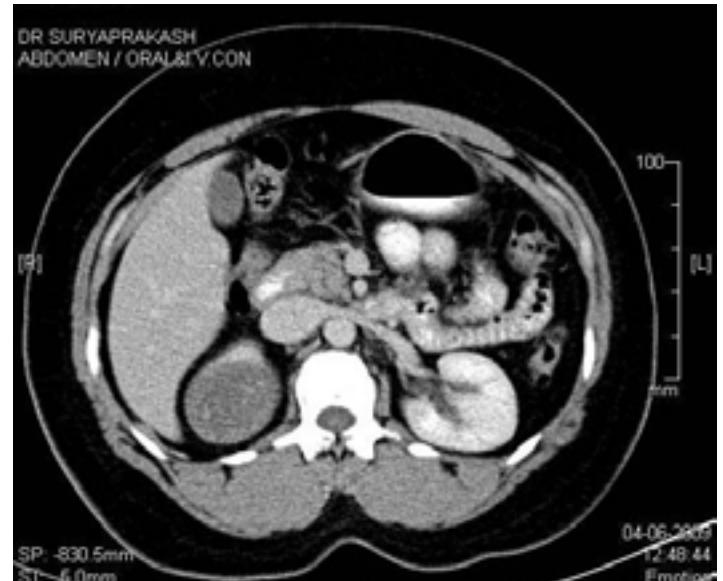
Figure 3. An intraoperative photograph showing an excised cyst on the upper pole of the right kidney.

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Figure 4. A CECT scan of the abdomen showing a right renal hydatid cyst.

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cyst contains detached brood capsules (daughter cysts), free larvae, and fluid, a combination known as hydatid sand [2].

Clinically, most patients with renal echinococcosis are asymptomatic, as the cyst growth is slow, at a rate of 1 cm annually. Because of their focal nature, small hydatid cysts will rarely affect renal function. As the lesion progresses, a mass effect will contribute to symptoms of dull flank pain, hematuria, and a palpable mass [2]. If the cyst ruptures, a strong antigenic immune response ensues, with possible urticaria and even anaphylaxis [3]. If a cyst ruptures into the collecting system, the patient will develop symptoms of hydatiduria, including renal colic and the passage of urinary debris resembling grape skins [4].

Radiological studies have an important place in the preoperative diagnosis of renal hydatid disease. However, there is no specific sign on plain radiography or intravenous urography, and the ultrasound or computed tomography cannot always show hydatidosis specifically [5]. Gharbi et al. described the ultrasonographic classification of hydatid cysts [3]. Various pathognomonic features on the ultrasound included spoke wheel appearance caused by multivesicular cysts, snow storm signs of hydatid sand, and water lily signs

of detached and floating membranes [4,6,7]. An intravenous urogram can demonstrate a communication within the pelvicalyceal system. Typical CT findings for renal hydatidosis include a cyst with a thick or calcified wall, a unilocular cyst with a detached membrane, a multiloculated cyst with mixed internal density, and daughter cysts with lower density than the maternal matrix [8,9]. The presence of daughter cysts on the CT helps to differentiate hydatid cysts from other complex renal cysts [4]. On magnetic resonance imaging (MRI), hydatid fluid is hypointense on T1-weighted images and hyperintense on T2-weighted images [10]. The characteristic hypointense rim sign is more evident on T2-weighted images [9,10]. When in doubt, serological tests aid in diagnosis. The Casoni test has been largely abandoned, as it is unreliable [11].

The treatment of hydatid cysts of the kidney is mainly surgical. Renal hydatid cysts with clear fluid and drainable material can be treated by sonographically guided percutaneous aspiration, injection, and reaspiration (PAIR) technique [12,13]. Renal-sparing surgery, cystectomy plus pericystectomy, is possible in most cases (75%), as we did in our cases. Nephrectomy (25% of cases) must be reserved for nonfunctioning kidneys, cysts replacing an entire renal parenchyma, and cysts opening into

the pelvicalyceal system. The extraperitoneal approach is preferred in order to avoid intraperitoneal dissemination. A major concern during surgery for cyst removal is cyst rupture, which can spread the brood capsules throughout the body, and secondary cysts can grow wherever their contents come to rest. A patient has to be operated under the cover of antihistaminics and steroids for the fear of anaphylaxis if cyst rupture occurs during surgery. Cyst excision should be preceded by cyst aspiration and the injection of scolical agents into the cyst, which include 20% hypertonic saline, chlorhexidine, 5% povidine iodine, 80% ethanol, 0.5 % cetrimide, 3% H<sub>2</sub>O<sub>2</sub>, and 0.5% silver nitrate. No intervention is needed when the cyst walls are calcified [14]. Laparoscopic surgery is highly efficacious and is associated with high success rates and minimal morbidity. Retroperitoneal approach is generally preferred to avoid peritoneal contamination [15,16]. Where available, robot-assisted surgical management can supplant pure laparoscopic management.

### REFERENCES

1. Volders WK, Gelin G, Stessens RC. Best Cases from the AFIP Hydatid Cyst of the Kidney: Radiologic-Pathologic Correlation. *Radiographics*. 2001;21:S255-S260. [PubMed](#)
2. Schaeffer AJ. Infections of the urinary tract. In: Walsh PC, Retik AB, Vaughn ED, et al., eds. *Campbell's Urology*. 8th ed. Philadelphia, PA: Elsevier; 2002:516-602.
3. Zmerli S, Ayed M, Horchani A, Chami I, El Ouakdi M, Ben Slama MR. Hydatid cyst of the kidney: diagnosis and treatment. *World J Surg*. 2001;25(1):68-74. [PubMed](#) ; [CrossRef](#)
4. Schaeffer AJ. Urinary tract infections. In: Gillenwater JY, Grayhack JT, Howards SS, et al., eds. *Adult & Pediatric Urology*. 4th ed. Philadelphia, PA: Lippincott, Williams & Williams; 2002:289-351.
5. Kilciler M, Bedir S, Erdemir F, Coban H, Sahan B, Ozgok Y. Isolated Unilocular Renal Hydatid Cyst: A Rare Diagnostic Difficulty with simple Cyst. *Urol Int*. 2006;77(4):371-374. [PubMed](#) ; [CrossRef](#)
6. von Sinner WN. New diagnostic signs in hydatid disease; radiography, ultrasound, CT and MRI correlated to pathology. *Eur J Radiol*. 1991;12(2):150-159. [PubMed](#) ; [CrossRef](#)
7. Marti-Bonmati L, Menor Serrano F. Complications of hepatic hydatid cysts: ultrasound, computed tomography, and magnetic resonance diagnosis. *Gastrointest Radiol*. 1990;15(2):119-125. [PubMed](#) ; [CrossRef](#)
8. Turgut AT, Altin L, Topçu S, Kiliçoğlu B, Aliinok T, Kaptanoğlu E, et al. Unusual imaging characteristics of complicated hydatid disease. *Eur J Radiol*. 2007;63(1):84-93. [PubMed](#) ; [CrossRef](#)
9. Pedrosa I, Saiz A, Arrazola J, Ferreirós J, Pedrosa CS. Hydatid disease: radiologic and pathologic features and complications. *Radiographics*. 2000;20(3):795-817. [PubMed](#)
10. Polat P, Kantarci M, Alper F, Suma S, Koruyucu MB, Okur A. Hydatid disease from head to toe. *Radiographics*. 2003;23(2):475-494. [PubMed](#)
11. Angulo JC, Sanchez-Chapado M, Diego A, Escibano J, Tamayo JC, Martin L. Renal echinococcosis: clinical study of 34 cases. *J Urol*. 1997;157 (3):787-794. [PubMed](#) ; [CrossRef](#)
12. Akhan O, Üstünsöz B, Somuncu I, Ozmen M, Oner A, Alemdaroğlu A, et al. Percutaneous renal hydatid cyst treatment: long-term results. *Abdom Imaging*. 1998;23(2):209-213. [PubMed](#) ; [CrossRef](#)
13. Sayek I, Tirnaksiz MB, Dogan R. Cystic hydatid disease: current trends in diagnosis and management. *Surg Today*. 2004;34(12):987-996. [PubMed](#) ; [CrossRef](#)
14. Horchani A, Nouira Y, Kbaier I, Attyaoui F, Zribi AS. Hydatid cyst of the kidney. A report of 147 controlled cases. *Eur Urol*. 2000;38(4):461-467. [PubMed](#) ; [CrossRef](#)
15. Ozden E , Bostanci Y, Mercimek MN, Yakupoglu YK, Yilmaz AF, Sarıkaya S. Renal hydatid cyst treatment: retroperitoneoscopic "closed cyst" pericystectomy. *Int J Urol*. 2011;18(3):237-239. [PubMed](#) ; [CrossRef](#)
16. Khan M, Sajjad Nazir S, Ahangar S, Farooq Qadri SJ, Ahmad Salroo N. Retroperitoneal laparoscopy for the management of renal hydatid cyst. *Int J Surg*. 2010;8(4):266-268. [PubMed](#) ; [CrossRef](#)