

# PCNL Approach for Treatment of Hydatid Cysts of the Kidney

## A New Percutaneous Treatment

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### INTRODUCTION

**H**ydatic disease, caused by *Echinococcus granulosus*, is a common health problem in Turkey and other Mediterranean countries and remains an important cause of morbidity.<sup>(1)</sup> Hydatid cyst mostly develops in the liver and lungs, while renal involvement is rare, comprising only 2% to 4% of all cases.<sup>(2)</sup>

Surgery has been the standard treatment for hydatid cyst of the kidney for a long time. Despite its efficacy, morbidity and mortality of surgery and the risk of recurrence were not negligible.<sup>(3,4)</sup> Mebendazole and albendazole have been used as medical treatment, but their place in the management of the hydatid cysts remains controversial<sup>(5,6)</sup> and large series for the medical treatment of renal hydatid disease are not available in literature.

To the best of our knowledge, there have been no published studies of percutaneous management of renal hydatid cyst by percutaneous nephrolithotomy (PCNL). The aim of this study was to assess the efficacy of treatment of the kidney hydatid cyst with a new technique and to determine the safety and results of long-term follow-up.

### CASE REPORT

A 45-year-old man presented with left lumbar pain and hematuria for 6 months. Abdominal examination demonstrated a palpable left-sided flank mass with moderate tenderness.

The routine laboratory findings were normal. Urinalysis showed red blood cells and leukocytes.

Indirect hemagglutination test was negative for *Echinococcus granulosus*.

Abdominal ultrasonography revealed a 115 × 130-mm Gharbi type III cyst in the upper pole of the left kidney. Computed tomography of the abdomen demonstrated a large cystic lesion of left anterior renal cortex with a well-defined wall and daughter cysts within (Figure 1).

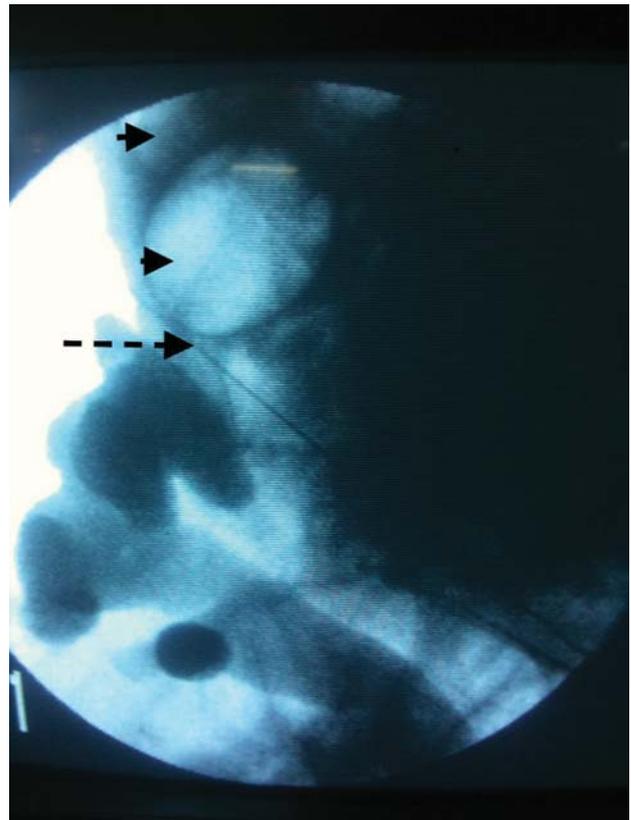
The patient refused any renal operation. Percutaneous intervention was offered for definitive diagnosis and treatment. Informed consent was obtained from the patient.

## TECHNIQUE

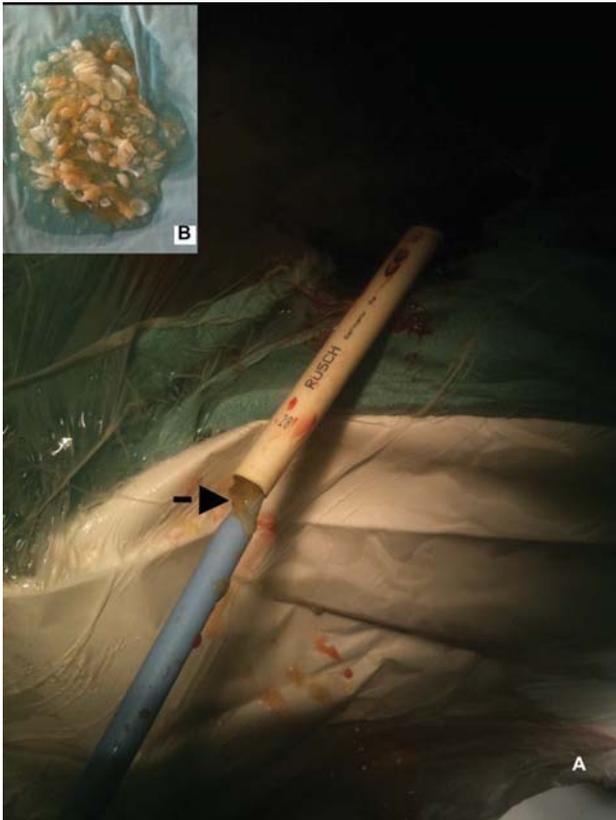
The patient received general anesthesia. A 7F ureteral catheter was inserted transurethrally with the patient in the lithotomy position. The patient was then placed in the modified supine position with ipsilateral flank elevation. A 20-gauge needle was horizontally introduced through the flank in the posterior axillary line into the cyst. Cyst access was achieved under fluoroscopic guidance. Opacification through the ureteral catheter allowed direct puncture of the cyst without crossing the pelvicaliceal system (Figure 2). The needle was connected to a 20-mL syringe, and hydatid fluid was aspirated to lower the intracystic pressure. Thereafter, a hypertonic 20% saline was injected into the cyst. The skin over the puncture site and the fascial layers were incised. After the needle was removed, the Alken guide was replaced under fluoroscopic guidance. Thereafter, a single 25F Amplatz dilator was passed on the Alken guide, on which an Amplatz sheath was introduced into the cyst. All steps of tract dilation and sheath placement were under radiographic control. After the correct position of the Amplatz sheath was ensured, multiple flimsy membranous structures embedded in gelatinous material came out of the sheath (Figure 3A). A 50-mL syringe was connected to the Amplatz sheath and a hypertonic 20% saline was injected repeatedly. The nephroscope was introduced into the cyst, and the hydatid material was aspirated (Figures 3B and 4). We did not perform any ablative therapy, but it will be probably useful to do an electrocautery of the germinal layer



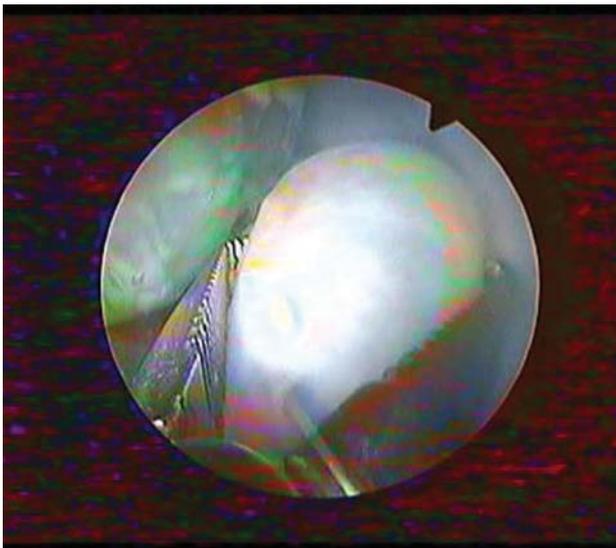
**Figure 1.** (A) Computed tomography of the abdomen demonstrating a large cystic lesion of left anterior renal cortex with a well-defined wall and daughter cysts within, (B) Computed tomography scan showing the association between the cyst and the kidney.



**Figure 2.** Fluoroscopic guidance. Opacification through the ureteral catheter allowed direct puncture of the cyst with fine needle (arrow) without crossing the pelvicaliceal system. Arrow heads show the daughter cysts.



**Figure 3.** (A) Multiple flimsy membranous structures embedded in gelatinous material came out of the sheath, (B) Hydatid material aspirated.



**Figure 4.** Endoscopic view showing a daughter cyst grasped by the forceps.

after the nephroscopy. An 18F nephrostomy tube was left indwelling for 72 hours. The ureteral catheter and the 16F Foley urethral catheter were removed the following day. The histopathologic findings confirmed the diagnosis. The patient was put on albendazole treatment regimen for three months. The abdomen computed tomography scan repeated after 10 months showed no recurrence of cyst (Figure 5).

## DISCUSSION

There is no “best” treatment option for hydatid cyst and no clinical trial has compared all the different treatment modalities. Because of the lower frequency of hydatid cyst in extrahepatic sites, the strength of recommendation is even lower than for treatment of hepatic hydatid cyst.

In general, surgery was the treatment of choice for hydatid cyst of the kidney. However, complete curative surgery is not always possible. In addition, the rate of operative mortality varies from 0.9% to 3.6% for the first procedure and increases with additional surgery to 20%. Furthermore, local recurrence of hydatid cyst after surgery reaches 30% and long hospitalization time after surgery is required.<sup>(4,7-9)</sup>

In the last years, laparoscopy has been used for the management of renal hydatid cyst. Both, transperitoneal and retroperitoneal routes have been used for the purpose. However, there is a risk of soiling the large peritoneal cavity if any spillage occurs during the operation using the transperitoneal route.<sup>(10)</sup> Furthermore, there are a few literature reports about the results of laparoscopy, and further studies of the long-term outcomes are necessary.

Since the first description of the PAIR (puncture, aspiration, injection of a scolicidal agent, and re-aspiration), various percutaneous treatments have been developed with minor variations of the classic procedure. Despite its efficacy and extensive use, the puncture of echinococcal cysts is still controversial mainly because of fear of anaphylaxis.

In the review by Neumayr and colleagues, of all percutaneous treatment procedures, the overall fatality rate due to lethal anaphylaxis was 0.03% (2 in 5943), and 1.7% (99 in 5943) reversible allergic reactions were reported.<sup>(11)</sup>



**Figure 5.** The abdominal computed tomography scan repeated after 10 months showed no recurrence of cyst with persistent densification of perirenal fat.

In the literature, lethal drug reactions are reported in 0.1% of medical and 0.01% of surgical inpatients. Antibiotics and non-steroidal anti-inflammatory drugs are the most concerned therapeutic classes. The overall fatality and allergic reactions to radiographic contrast rates are 0.001% to 0.009% and 1%, respectively.<sup>(12)</sup>

Analysis of the literature shows that lethal anaphylaxis related to percutaneous treatment of hydatid cyst is an extremely rare event and is observed no more frequently than drug-related anaphylactic side effects.

For our patient, only PAIR without resecting the gelatinized material and scolex in the cyst was not an appropriate technique. While performing PCNL and resecting the cyst content might improve the success rate and prevent the recurrence. Furthermore, cauterizing the germinal layer to avoid the recurrence would be an additional process.

Concerning the medical treatment, albendazole is currently the drug of choice to treat hydatid cyst, either alone or together with percutaneous treatment.<sup>(9)</sup> Given orally with a dosage of 10 to 15 mg/kg/day in two divided doses, with a fat-rich meal to increase its bioavailability, it should be administered continuously, without the monthly treatment interruptions recommended in the 1980s. It is indicated for inoperable patients with the liver or lung hydatid cyst; pa-

tients with multiple cysts in two or more organs or peritoneal cysts. Some authors recommend using albendazole to prevent recurrence following surgery or PAIR.<sup>(13)</sup> Our patient received albendazole treatment regimen for three months.

In departments used to percutaneous surgery, PCNL is a simple approach. It is easy to apply, repeatable, not expensive, and does not require long hospitalization. When the technique is applied properly, relapses will not probably occur. The patient in this report had a huge hydatid cyst in the left kidney with multiple daughter cysts, and was successfully treated with this new approach without recurrence.

This new percutaneous method can be an alternative to surgery or PAIR in selected patients with renal hydatid cyst. However, additional experience and further reports are necessary to confirm its safety and efficacy.

## CONFLICT OF INTEREST

None declared.

## REFERENCES

1. Vuitton DA. The WHO Informal Working Group on Echinococcosis. Coordinating Board of the WHO-IWGE. *Parassitologia*. 1997;39:349-53.
2. Gogus C, Safak M, Baltaci S, Turkolmez K. Isolated renal hydatidosis: experience with 20 cases. *J Urol*. 2003;169:186-9.
3. Langer JC, Rose DB, Keystone JS, Taylor BR, Langer B. Diagnosis and management of hydatid disease of the liver. A 15-year North American experience. *Ann Surg*. 1984;199:412-7.
4. Sielaff TD, Taylor B, Langer B. Recurrence of hydatid disease. *World J Surg*. 2001;25:83-6.
5. Todorov T, Vutova K, Mechkov G, Petkov D, Nedelkov G, Tonchev Z. Evaluation of response to chemotherapy of human cystic echinococcosis. *Br J Radiol*. 1990;63:523-31.
6. Vutova K, Mechkov G, Vachkov P, et al. Effect of mebendazole on human cystic echinococcosis: the role of dosage and treatment duration. *Ann Trop Med Parasitol*. 1999;93:357-65.
7. Schiller CF. Complications of echinococcus cyst rupture. A study of 30 cases. *JAMA*. 1966;195:220-2.
8. Saimot AG. Medical treatment of liver hydatidosis. *World J Surg*. 2001;25:15-20.

9. Franchi C, Di Vico B, Teggi A. Long-term evaluation of patients with hydatidosis treated with benzimidazole carbamates. *Clin Infect Dis.* 1999;29:304-9.
10. 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;8:266-8.
11. Neumayr A, Troia G, de Bernardis C, et al. Justified concern or exaggerated fear: the risk of anaphylaxis in percutaneous treatment of cystic echinococcosis-a systematic literature review. *PLoS Negl Trop Dis.* 2011;5:e1154.
12. Vervloet D, Durham S. Adverse reactions to drugs. *BMJ.* 1998;316:1511-4.
13. Arif SH, Shams UI B, Wani NA, et al. Albendazole as an adjuvant to the standard surgical management of hydatid cyst liver. *Int J Surg.* 2008;6:448-51.