

# Isolated cardiac hydatid cyst of the right ventricle

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## Abstract

A hydatid cyst is a parasitic disease that most commonly affects the liver and lungs: it rarely affects the heart: right ventricular involvement is even less common. A 33-year-old male patient with a cardiac cystic mass, detected during echocardiography, was evaluated. Early surgery was the best treatment option. A hydatid cyst is located in the right ventricular wall and detected during surgery. The cyst was drained and the defect in the right ventricle was quilted. Postoperative follow-ups occurred, and he was discharged with albendazole in good health.

**Keywords:** Hydatid cyst, Asymptomatic, Right ventricle

## Introduction

Hydatid disease is a parasitic disease caused by echinococcus granulosus. It is endemic in subtropical and tropical regions and occurs in approximately 2-6% of the population [1]. It can be seen in any part of the body, but the pericardium and heart are rarely involved. Cardiac involvement occurs in 0.5–2% of cases [2], with right ventricular involvement about 10% of them [3-5]. The main treatment is surgery; its rate of recurrence of is unknown, but is extremely rare. Serological tests are generally ineffective in showing the possibility of recurrence.

We present a very rare case of asymptomatic isolated cardiac hydatid cyst in the right ventricular wall, which was successfully treated with surgery.

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### Informed Consent

The authors stated that the written consent was  
obtained from the patient presented with images  
in the study.

### Conflict of Interest

No conflict of interest was declared by the  
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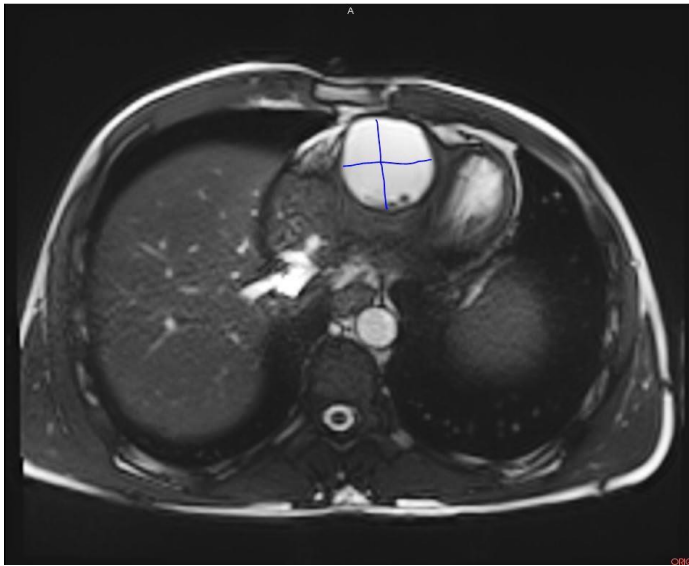
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## Case presentation

We evaluated a 33-year-old male patient, with a mass in the heart detected during echocardiography. No pathology was found on physical examination. His body temperature was 36.6 degrees C, pulse 81, and blood pressure 130/80. ECG abnormality exhibited T wave negativity in D<sub>2-3</sub> leads and a biphasic T wave in V<sub>2-3</sub> leads. Transthoracic echocardiography showed a 48x42 mm cyst mass in the right ventricle. Blood tests were completely normal. MRI showed a lesion compatible with hydatid cyst originating from the free wall of the right ventricle, filling the lumen of the right ventricular apex, creating mild pressure to the interventricular septum. The patient was scanned for other lesions, which were not found (Figure 1).

Figure 1: Abdominal computed tomography examination of the case.



After obtaining written informed consent from the patient, he was taken to the operating room. Surgery started in the supine position under general anesthesia. Median sternotomy was performed and the pericardium was opened, respectively. There was a 6x6 cm cystic lesion at the edge of the acute margin in the right ventricular wall. Heparinization aorto-bicaval cannulation was performed and then extracorporeal circulation was started, with the x-clamp placed on the ascending aorta to achieve arrest with antegrade isothermal blood cardioplegia. Moreover, 3% NaCl with gauze was placed around the cyst, with 40 cc of cystic content aspirated, while the same amount of 3% NaCl was used in the cavity. After ten minutes, the cyst was opened, with a germinative membrane removed (Figure 2, 3). The cavity was irrigated with 1000 ml of 3% NaCl (Figure 4). Subsequently, the cystic cavity was plicated (capitonnage procedure). The outer layer of the ventricle was sutured with six 2/0 TiCron sutures. After de-airing cardiac chambers, the X-clamp was removed. Sinus rhythm was achieved, with the surgery completed.

The postoperative course was uneventful, with the patient discharged on the fifth postoperative day with albendazole, as per the recommendation of the infectious diseases department. The pathological examination confirmed cardiac echinococcosis.

Figure 2: Operative view of the right ventricular cyst.

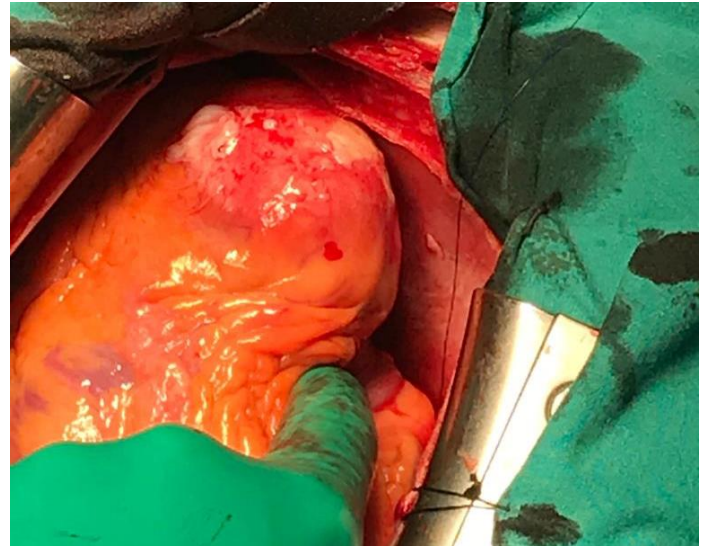


Figure 3: Operative view of the right ventricular cyst.

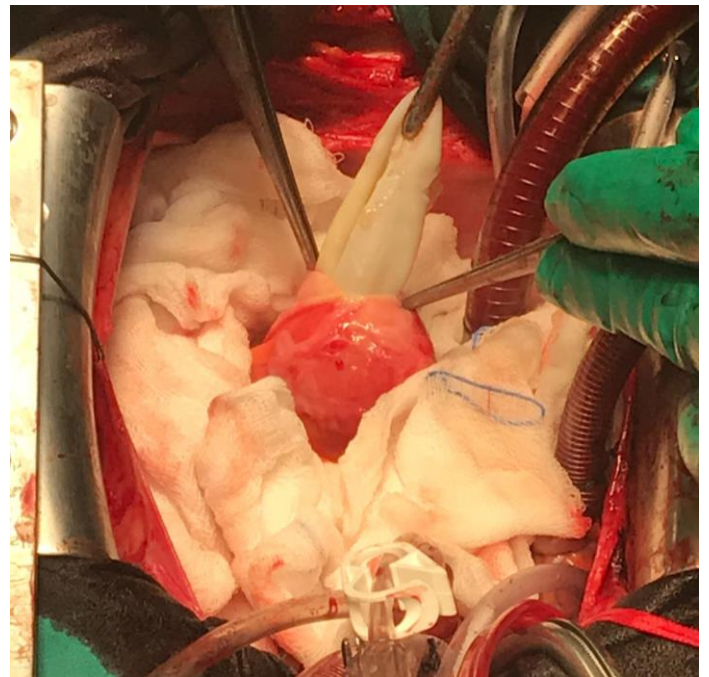
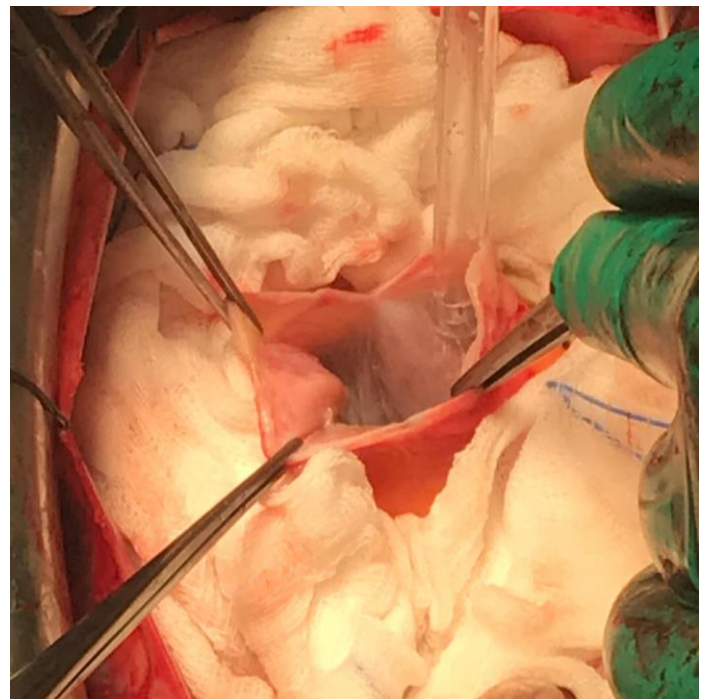


Figure 4: Operative view of the right ventricular cyst.



## Discussion

As stated, a cardiac hydatid cyst is a rare disease and right ventricular involvement is infrequently detected [2-5]. Areas of cardiac involvement include the left ventricle 60%, right ventricle 10%, pericardium 7%, pulmonary artery 6%, and the left atrial appendage 6% [3]. Right-sided cysts tend to expand intracavity and subendocardial area, with right ventricular cysts rupturing more often [6]. The type of operation may vary depending on the case. Cysts unrelated to the heart chambers can be operated on without using extracorporeal circulation [7, 8]. In our case, extracorporeal bypass was preferred, as the cyst was associated with the right ventricle. As such, we determined that it would be easier to control local dissemination.

The operation was performed in the supine position under general anesthesia. We preferred a median sternotomy, given our experience, which also provides better access to all cardiac structures. Although several agents have been used intraoperatively for protoscolicidal effect, such as iodine solution, cetrimide, ethanol, hypertonic saline, chlorhexidine, and methylene blue, the gold standard agent has not been identified [1, 7, 9, 10]. There are publications that do not mention scolicidal impact during the operation [11]. According to the recommendation of the thoracic surgery clinic, which has more experience in hydatid cysts, with the risk that it might have reached the ventricle - we preferred 3% hypertonic saline solution. The area around the cyst required 3% NaCl impregnated gauze for Vakilian et al. [11], removing the cyst directly. We aspirated and irrigated it with hypertonic saline. The cyst was opened, with the germination membrane carefully and completely excised, in an extremely important step: this leads to anaphylaxis, pulmonary embolism, sudden death, relapse, and secondary seeding of daughter cysts into other areas of the body [1, 6]. The right ventricular chamber was reached when all cystic structures were excised, but some surgeons do not close the cyst cavity. For example, Gupta and Priyadarshini left the cavity open after removing the cyst in the left ventricular wall [7]. We performed a capitonnage procedure with six 2/0 TiCron sutures, as the cavity is connected to the ventricular chamber. Ipek et al. [12] used teflon sutures in this procedure, as they have generally been used in other publications. We decided to use 2/0 TiCron sutures for the heart, a strong and continuously mobile organ: this suture offers high tensile strength, ease of tissue passage, permanent support, and surface lubricity. The case was terminated routinely in the sinus rhythm.

## Conclusion

Early and accurate diagnosis is crucial in cardiac hydatid disease. In addition, treatment is surgical and must not be delayed. As in our case, cardiac echinococcosis should be considered as a differential diagnosis, especially in asymptomatic cases from endemic regions. Surgical results are generally satisfactory, and most patients completely recover.

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