



E-ISSN: 2616-3470  
P-ISSN: 2616-3462  
© Surgery Science  
[www.surgeryscience.com](http://www.surgeryscience.com)  
2020; 4(4): 218-221  
Received: 12-08-2020  
Accepted: 18-10-2020

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## Video assisted thoracoscopic excision of pulmonary hydatid cyst: A case report

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**DOI:** <https://doi.org/10.33545/surgery.2020.v4.i4d.561>

### Abstract

Pulmonary hydatid cyst disease or echinococcosis is a parasitic disease caused by larvae of the tapeworm *Echinococcus*. Four species are recognised and the vast majority of infestations in humans are caused by *E. granulosus*. The classic management of pulmonary hydatid disease is surgical removal of the cysts by means of thoracotomy or sternotomy. With the advent of surgical experience in thoracoscopic surgery, a minimally invasive surgical technique to treat the disease is being developed. In this case report, we have reported video assisted thoracoscopic excision of pulmonary hydatid cyst in a 24 year old female, its post-operative care and recovery.

**Keywords:** Pulmonary hydatid cyst, thoracoscopic excision, surgical management

### Introduction

Pulmonary hydatid cyst disease is a parasitic disease commonly encountered in low-to-middle income countries. Echinococcosis or hydatid disease is caused by larvae of the tapeworm *Echinococcus*. Four species are recognised and the vast majority of infestations in humans are caused by *E. granulosus*.

It is endemic in sheep- and cattle-raising areas of the world such as the Mediterranean, the Middle East, South America, Australia, India, and the Balkans. Of patients with cystic echinococcus, 85–90% show single organ involvement and >70% harbour a solitary cyst. The liver is the most common site of cyst formation, followed by the lung in 10–30% of cases and other sites (usually the spleen, kidney, orbit, heart, brain and bone) in ~10% of cases. Pulmonary hydatid disease affects the right lung in ~60% of cases, 30% exhibit multiple pulmonary cysts, 20% bilateral cysts and 60% are located in the lower lobes

The classic management of pulmonary hydatid disease is surgical removal of the cysts by means of thoracotomy or sternotomy. With the advent of surgical experience in thoracoscopic surgery, a minimally invasive surgical technique to treat the disease is being developed. The minimally invasive technique of removing the cyst included all the principles of conventional hydatid disease surgery.

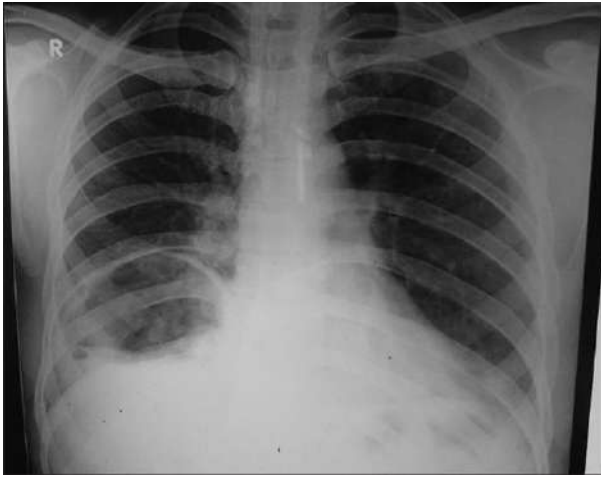
### Case report

24 year old female presented to the OPD with C/o breathlessness and pain while breathing since 2 years. She also gave h/o nonproductive cough since 2 years. She also gave h/o fever- on and off since 6 months. Patient also gave history of jaundice 2 years back, which was treated on medication by the local doctor.

On general examination, the patient was afebrile, hemodynamically stable, with a BMI of 21.6. On Respiratory system examination, air entry was decreased on the right side. No added sounds were heard.

**Chest X-ray pa view:** A well-defined round homogenous radio-opacity is noted in right lower lung zone obscuring the right CP angle likely s/o hydatid cyst.

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**Fig 1:** Chest xray showing pulmonary hydatid cyst

**HRCT Thorax**

A large well defined, well encapsulated, hypodense fluid attenuation non enhancing lesion measuring 8.5 x 8.1 x 10.6 cm and approx. volume of 360 cc noted in lower lobe of right lung. No calcific foci noted within. No e/o floating membrane seen within.

Above imagings are s/o cystic lesion in right lower lobe ? hydatid cyst,?? Bronchogenic cyst.



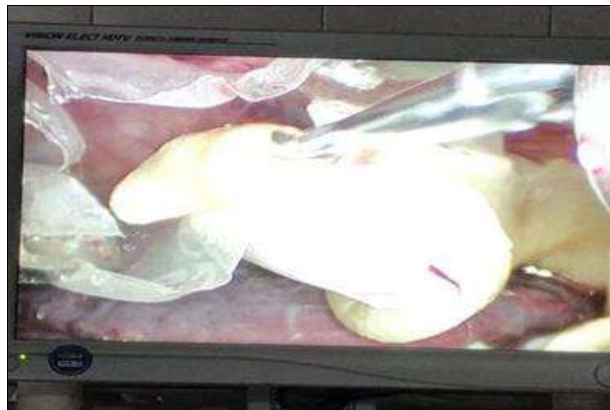
**Fig 2:** HRCT Thorax showing pulmonary hydatid cyst

Thoracoscopic excision of hydatid cyst was done under General Anaesthesia and one-lung Ventilation. At 5<sup>th</sup> intercostal space, 10mm port was inserted. Anther two 5mm ports were inserted at 3<sup>rd</sup> and 7<sup>th</sup> intercostal space.

After CO2 insufflation right thoracic cavity was visualized. Evidence of 8 x 10 cm hydatid cyst in base of right lung which was separated from surrounding tissue. Liquified cyst fluid was aspirated. Cyst wall and membrane were separated and aspirated out. Base of cyst wall left was in situ. Warm NS wash was given. After confirming hemostasis ICD no. 28 was inserted.



**Fig 3:** Intra-operative photo showing port insertion.



**Fig 4:** Intra-operative finding of a single pulmonary hydatid cyst



**Fig 5:** Intra-operative photo



**Fig 6:** Thoracoscopic excision of Pulmonary hydatid cyst

After thoracoscopic excision of cyst, it was sent for histopathological examination.

**Histopathology report revealed:** Right lung cyst- Histological features are consistent with hydatid cyst.

Post-operative Xray were taken on zero, second, fifth and seventh post-operative day. Mild post-operative pleural effusion was noted which resolved on its own by post-operative day 7. There were no other post-operative complications observed. Inter-coastal Chest tube was removed on post-operative day 7.



**Fig 7:** Immediate Post-operative X-ray



**Fig 8:** Post-operative day 5



**Fig 9:** Post-Operative Day 2



**Fig 10:** After ICD Removal

## Discussion

Hydatid disease, primarily an infection of dogs and sheep, with humans being intermediate hosts, is unfortunately still endemic in many developing regions of the world. Although liver is the main site for this parasitic infection, lungs are also involved with a relatively higher incidence in younger age group. Approximately 1-to 2-cm enlargement of cyst per year is considered an average growth in the liver, whereas lung hydatid cysts can enlarge much more rapidly, up to 5 cm per year. Pulmonary hydatid cyst is often symptomatic with coughing present in the majority of the patients. Symptoms are probably due to the mass effect or bronchial opening of the cyst, which may differ between studies of patients who have various cyst volume and cyst rupture rate. Although thoracic CT scan is not mandatory, it is important to have better information about surrounding structures (such as bronchus or vasculature) of the cyst, especially when capitonage is considered. The inclusion of abdominal ultrasonography in the protocol of investigation is necessary for detecting a multi-organ involvement. Rupture of the cyst is reported in 26.7% to 64% of the patients, and a giant cyst is expected to break more easily. All patients with Pulmonary hydatid cyst are to be treated with albendazole before the surgical intervention, according to the World Health Organization guidelines. We administered an antihelminthic medication 1 week before the surgical intervention. The dose of albendazole is 10 mg/kg/day, administered twice daily. There are several reports supporting the opinion that small lesions may benefit from medical therapy alone. Indications for surgical

intervention in PHC include large pulmonary cysts that rarely respond to medical treatment, and recurrence after medical therapy and drug side effects. According to protocol, cysts larger than 5 cm should be routinely operated. Postoperative complications such as residual bronchial fistula, prolonged air leak, pneumothorax, and localized air cyst and median hospital stay are significantly higher in thoracoscopy group. As previously mentioned, the main difficulty occurs following the membrane extraction and exposure of the residual cavity during thoracoscopy. The control of the bronchial fistulae is challenging. Large cysts are often difficult to treat by thoracoscopy due to persistent or missed bronchial openings that may result in extended air leaks and drainage time or a conversion to thoracotomy.

## Conclusion

In conclusion, Thoracoscopic management is recommended in patients with uncomplicated hydatid cyst. In complicated hydatid cysts, thoracoscopic wedge resection, if possible and conversion to mini-thoracotomy when there is difficulty in controlling bronchial openings is recommended.

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