



## LAPAROSCOPIC MANAGEMENT OF LIVER HYDATID DISEASE

## Surgery

**Dr. Sanjay Chaube\*** Chaube Endosurgery, Opp. Ware House, Shivapuri Road, Jhansi – 28003, India  
\*Corresponding Author

**Dr. Jyoti C. Vyas**

## ABSTRACT

**Background:** Hydatid disease is a zoonosis produced by the larval stage of *Echinococcus granulosus*, with an endemic distribution, mainly in the rural areas. The management of Hydatid disease includes medical treatment with Albendazole in association with surgical treatment, which may be achieved by open surgery or laparoscopic approach.

**Aims and objective:** The objective of this study was to analyze the laparoscopic management of hepatic hydatid disease and to investigate that the minimal invasive surgery is a new modality of treatment.

**Materials and Methods:** A total of 28 patients with liver hydatid cyst (LHC) were enrolled and all were treated with laparoscopy.

**Results:** 12 patients were male and 16 patients were female from 28 enrolled patients. Patient's age was from 22 to 56 years of age. Out of 28 LHC patients 21 were from right lobe and 7 were from left lobe of liver. Size of the cyst was varied from 11 to 17 cm. Aspiration of cyst was carried out by laparoscopy. Daughter cyst was also observed during surgery. Excision of the cyst wall after removal of the contents was performed which leads to accomplishment of marsupialization of cyst wall.

**Conclusion:** It is concluded that laparoscopic management of liver hydatid disease is simple and effective which causes minimal morbidity and has good outcome.

## KEYWORDS

Hydatid disease (Hydatidosis), Laparoscopic, *Echinococcus granulosus*, Liver Hydatid Cyst, Surgery

## Introduction

Hydatid disease (Hydatidosis) in man is caused principally by infection with the larval stage of the dog tapeworm *Echinococcus granulosus* (*E. granulosus*). It is a significant pathogenic zoonotic parasitic infection (acquired from animals) of humans, following incorporation of tapeworm eggs excreted in the faeces of infected dogs.

Three species of tapeworm are of importance in human hydatid disease worldwide, *E. granulosus*, *E. multilocularis* and *E. vogeli*.

*E. granulosus* is a small tapeworm which is about 2 to 7 mm in length and usually has about 3 segments. *E. granulosus* is distributed throughout most of the world, especially in areas where sheep are raised, and is endemic in Asia, North Africa, South and Central America, North America, Canada and the Mediterranean region.

Hydatid disease is more prevalent in rural areas of many countries, where there is close contact between people and dogs. The various domestic animals which act as intermediate vectors.

Once the egg enters the gut, it then hatches in the intestine, enters the gut wall and moves through the body in the blood or lymphatic system. As and when human beings become infected following ingestion of *E. granulosus* eggs, cysts can develop in a wide range of sites throughout the body, although as blood from the mesenteric vessels pass to the liver, it is the liver in which the majority of cysts are found.

The cysts of *E. granulosus* may take years to produce clinical symptoms. Cyst growth is very slow and carriers may be asymptomatic throughout the infected individual's life and be found only at autopsy, during surgery or when X-rays or imaging studies are taken for other reasons.

There is an inflammatory reaction in the adjacent tissue, with formation of a fibrous, encapsulating membrane. If the outer laminated wall of the cyst calcifies, the cyst then remains asymptomatic. In locations such as the abdomen, where growth of the cyst is not restricted by anatomical structures, it can grow very large and contain several amount of fluid. Rupture of the cyst presents the greatest danger for the patient and it may be fatal.

Each egg hatches in the small intestine of the sheep where it penetrates the gut wall. This larval stage of the parasite (called an oncosphere) is carried via the bloodstream to target organs in other parts of the body (Like liver, lungs, brain, muscles, etc.) where they develop by expansion into a hydatid cyst called a metacestode.

Dogs are in turn, infected by ingesting meat and viscera containing viable cysts, for example by eating an infected rodent, or being fed or through scavenging infected sheep meat and viscera. Humans are accidental intermediate hosts; they do not play a role in the biological cycle but may act as agents perpetuating the disease by feeding dogs infected meat and viscera.<sup>1</sup>

The management of hedatid disease includes medical treatment in association with surgical treatment. Surgical procedures vary from puncture-aspiration-injection-re-aspiration (PAIR) to partial resection and they can be divided into conservative or radical surgeries.<sup>2</sup>

The aim of conservative surgery is to sterilize and clear the content of the cyst, including the hydatid membrane by puncture of the cyst followed by aspiration of the entire content and partial resection of the cyst. After the partial resection of the cyst, it may be possible for bacterial infection. The radical surgery is related to remove the entire cyst, with or without hepatectomy. However, the intraoperative risks and postoperative complications are higher.<sup>2</sup>

Laparoscopy was not established immediately or used in the treatment of hepatic hydatidosis. Due to the concerns from some of the authors who considered that the rate of recurrence and risk of intraoperative spreading is much higher than in open surgery. However, many studies have proved that the short term recurrence rate for laparoscopic intervention is low (1-9%), compared to that of open surgery (0-30%).<sup>2</sup>

Numerous laparoscopic techniques were described: complete pericystectomy (used in the case of small cysts with a superficial localization), puncture aspiration followed by marsupialization andomentoplasty, cystectomy and hepatectomy (used in case of large cysts, deep localization).<sup>2</sup>

The objective of this study was to analyze the laparoscopic management of hepatic hydatid disease and to investigate that the minimal invasive surgery is a new modality of treatment.

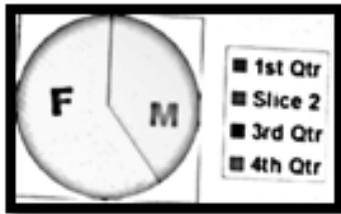
## Materials and Methods

Study was conducted in the Department of surgery, St. Jude's Hospital, Bundelkhand Laparoscopic Surgery Centre, Jhansi, India.

After obtaining consent from patients of liver hydatid cyst (LHC) were enrolled in the study.

Total 28 patients were enrolled from January 2008 to March 2015 (in a period of 7 years).

Out of 28 enrolled patients, 12 were male and 16 were female.



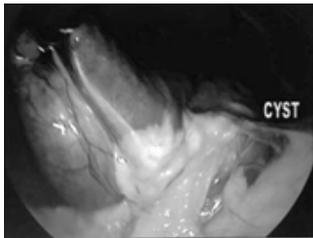
**Figure 1: Male:Female Ratio**

Patients were diagnosed with mean age of 38 years (22 years to 56 years of range).

For all the enrolled patients, laparoscopy procedure was performed to measure the location and size of the cyst.

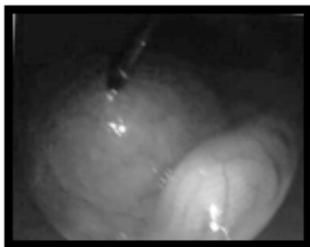
LHC in 21 patients were located in right lobe where in 7 patients it was in left lobe.

Size of the Cyst was varied from 11 cm to 17 cm.



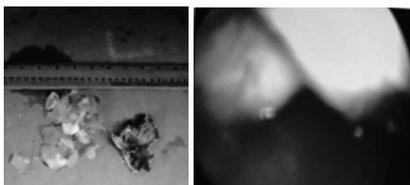
**Figure 2: Liver Hydatid Cyst**

Hypertonic sodium chloride (9%) was injected in the cyst, waited for 15 minutes. Following to that a 10 mm trocar was introduced in the cyst and then the content was aspirated.



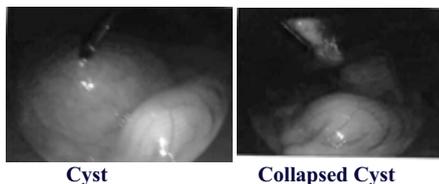
**Figure 3: 10 mm Trocar in cyst**

After aspiration of cysts, daughter cysts were also found as per following:



**Figure 4: Cyst showing daughter cysts**

After completion of aspiration, cysts were found collapsed and marsupialization of the cyst was performed with the help of bipolar electro-surgical generator.



**Cyst**

**Collapsed Cyst**

**Figure 5: Collapsed cyst**

Excision of the cyst wall after evacuation of the contents was performed which leads to completion of marsupialization of cyst wall.

### Results and Discussion

As per this study, patients were diagnosed with mean age of 38 years (22 years to 56 years of range). Same results were found by Palanivelu C. et al.<sup>3</sup> According to Palanivelu C. et al. the average age of 66 patients in study was 38.6 years (14 years to 64 years of range). Similar results were also observed with Yagmur Y. et al.<sup>4</sup> According to Yagmur Y. et al. the range of age for patients with LHC was 16 to 71 years.

In this study, Out of 28 enrolled patients, 12 were male and 16 were female. The male:female ratio was 12:16 (3:4). Similar results were found by Yagmur Y. et al.<sup>4</sup> According to Yagmur Y. et al., out of 44 patients in the study, 14 patients were male and 30 patients were female. The ratio of male:female was 14:30 (2:4.3).

Size of the Cyst in this study was varied from 11 cm to 17 cm. Similar results were found by Yagmur Y. et al.<sup>4</sup> According to Yagmur Y. et al., the cyst diameter ranged from 4 to 16 cm.

In current study, LHC in 21 patients were located in right lobe where in 7 patients it was in left lobe. Similar results were found by Palanivelu C. et al.<sup>3</sup> As per Palanivelu C. et al., out of 66 enrolled patients, location of LHC in 36 patients were at right lobe, in 26 patients it was in left lobe and in 4 patients it was bilateral.

In this study, average procedure time was 59 minutes which was ranging from 42 to 96 minutes. Similar type of results were found by Palanivelu C. et al.<sup>3</sup> According to Palanivelu C. et al., average duration of surgery was 52 minutes ranging from 36 to 94 minutes. However, as per Yagmur Y. et al.<sup>4</sup>, the average operation time was 90 minutes (Range: 60-190 minutes).

In this study, no perioperative or postoperative complications were occurred. Post-operative period was uneventful except in one patient who developed persistent biliary leakage which was managed with endoscopic retrograde cholangiopancreatography (ERCP) and biliary stenting. As per Palanivelu C. et al.<sup>3</sup> study, none of the patient experienced intra-operative anaphylactic shock. Post-operatively, 2 (3%) patients had infection, 9 patients had biliary leak that stopped draining by 5 days to 7 days. Whereas as per Yagmur Y. et al.<sup>4</sup>, 7 patients out of 44 patients had biliary leakage through their cystic cavity drains. Five stopped spontaneously by the 7<sup>th</sup> postoperative day and in 2 patients, ERCP and sphincterotomy were performed and bilateral ceased after 48 hours.

In current study, the average hospitalization stay was 4 days (Range: 3 to 5 days). As per Radu N.B. et al.<sup>2</sup>, the patient was discharges after 5 day of surgery. As per Yagmur Y. et al.<sup>4</sup>, the mean hospitalization was 3 days (range 2-10 days)

In current study, patients returned to usual activity within 10 days of the procedure. Follow-up of twelve months showed no recurrence. As per Palanivelu C. et al.<sup>3</sup>, after average regular follow-up period of 5.8 years in 52 patients out of 66 patient, there was no recurrence observed.

### Conclusion

It is concluded that laparoscopic management of liver hydatid disease is simple and effective which causes minimal morbidity and has good outcome.

### REFERENCES

1. Dr. Robert S., Information about hydatid disease, National Public Health Service for Wales, Ver 1, Apr 2007: 1-5.
2. Ranu N.B., Laura T. and Andreea M., Laparoscopic Management of Hydatid Cyst in Children, Journal of Surgery, 11(4), 173-175.
3. Palanivelu C., Kalpesh J., Vijaykumar M., Senthikumar, Rajan P.S., Sendhikumar K., Parthasarathi R. and Alfie K., Laparoscopic management of Hepatic Hydatid Disease, Journal of the Society of Laparoendoscopic Surgeons, 2006, 10, 56-62.
4. Yagmur Y., Akbulut S., Gumus S., Bubur M. and Can M. A., Laparoscopic management of Hydatid cyst of liver, South African Journal of Science, Sep 2016, 54(3), 14-17.