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# Laparoscopic Treatment of Hydatid Cyst of Liver: Outcome at Tertiary Care Hospital

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***Authors' contributions***

*This work was carried out in collaboration among all authors. Author SK designed the study, wrote the protocol and wrote the first draft of the manuscript. Author AT managed the analyses of the study. Author AAS managed the literature searches and guidelines. Author MUR contributed in data collection and manuscript writing. All authors read and approved the final manuscript.*

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## ABSTRACT

**Objective:** To determine the outcome of laparoscopic treatment of hydatid cyst of liver at tertiary care Hospital.
**Methodology:** This cross sectional, study was conducted at public and private sector Hospitals of Jamshoro/Hyderabad from June 2017 to Sept 2019. It includes all diagnosed patients of Hydatid cyst of liver with either of gender and age range from 15 to 65 years who were operated laparoscopically. Patient's demographic information, postoperative complications, operative time and hospital stay were recorded via self-made proforma and data was analyzed by using SPSS version 20.
**Results:** Total 29 patients were admitted with hydatid disease of liver and out of them 21 patients underwent laparoscopic treatment during study period; their mean age was 46.7±13 years. Males were commonest 71.42% and 28.57% were female. Mean operative time was 98.3±18 minutes. According to postoperative pain, the average of visual analog score was 07.85±1.38 at 24 hours and 3.42±1.50 at 72 hours. VAS mean was 07.8 and 3.4 respectively. Cavity related infection was

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noticed in 3 cases; port site infection in two cases, bile leak in two and residual cyst was also found in two patients. Mean postoperative Hospital stay was 6.6 days.
**Conclusion:** Laparoscopic surgery for hepatic hydatid disease can be conducted safely as it provides advantages of minimal invasive surgery. Careful selection of the patient is utmost important to achieve good results especially in initial phases.

*Keywords: Hydatid disease liver; laparoscopic treatment; outcome.*

## 1. INTRODUCTION

Since the period of Hippocrates, Hydatid disease (echinococcosis) was known, and defined as "liver loaded with water." [1]. It is a zootic disease as well as a parasitic condition caused by the Echinococcus-granulosus (tapeworm metacestodes). Infestation by the echinococcus-granulosus emerges among humans when tapeworm eggs are ingested by chance [2,3]. The liver is a mostly frequent affected body part, with 55–80% of cases being affected at right lobe. This disorder is endemic in most regions globally, especially Mediterranean countries, New Zealand, North Africa, South America, Turkey, Middle East, Australia, North China. Indian subcontinent) incidence is increasing due to globalization and is highest in the developing countries [4,5]. Around 4,000 cases with hydatid disease are reported in Turkey every year [6]. Based on the extent of cysto-biliary communication, the intrabiliary rupture's (IBR) clinical presentation can vary from symptomless to pancreatitis, cholecystitis, jaundice, liver abscess, cholangitis, and septicemia [7]. As per the convenience of travel, the surgeons encountering this disease in even non-endemic regions must be familiar with its ideal management. The treatment modalities of hydatid hepatic cyst include percutaneous drainage, medical therapy, or surgery (*via* a laparoscopic or conventional approach) [8]. Surgical options may be percutaneous aspiration, deroofing, introflexion, omentoplasty, pericystectomy and hepatic resection [9]. Since Minimal invasive techniques of dealing with intra-abdominal pathologies are showing an increasing trend, same is seen for laparoscopic management of hydatid hepatic disease. Recently, it was reported that Compared with open surgical procedure, laparoscopy can make a significant contribution in enhancing post-operative rehabilitation, lowering morbidity and rates of recurrence [10]. Laparoscopic resections of hepatic hydatid have gradually risen among surgery experts from both the non-endemic and the endemic region. While early laparoscopic procedures of hepatic hydatide disease were limited to basic drainage, further specialized laparoscopic approaches are now available in selective cases, such as pericystectomy and segmentectomy [7,11]. Although several comparative studies comparing the perioperative outcome of these two approaches have been reported, however, the feasibility, safety and efficacy of laparoscopy for hepatic echinococcal cysts cases are still controversial [3]. Very limited local data signifies this study in determining outcome of laparoscopic treatment for hydatid cyst of liver at LUMHS.

## 2. MATERIALS AND METHODS

**Study design:** This was a cross-sectional study.

**Setting:** This study was conducted at public and private sector Hospitals of Jamshoro/Hyderabad.

**Duration:** From June 2017 to Sept 2019.

**Inclusion Criteria:** All the patients having single hydatid cyst in liver, age more than 15 years and either of gender were included.

**Exclusion Criteria:** Patients having jaundice and uncontrolled other comorbidities, multiple cysts, recurrent cyst, cyst size more than 15 cm and less than 5 cm, posterioly and centrally located, calcified and heterogeous cyst, patients who have not consented, converted to open method were excluded.

**Data Collection Procedure:** All the patients were evaluated clinically. The diagnosis was confirmed by ultrasound abdomen, CT abdomen and echinococal antibodies. All preoperative work up and anaesthesia fitness were done. Preoperative medical treatment (Albendazole 800 mg/day, 10 days before surgery) continued post operatively for 4 weeks and prophylactic antibiotics given. After confirmation of diagnosis, standard protocols and informed consent were taken. Patients were operated through laparoscopic technique and performed cystostomy with partial cystectomy and omentoplasty. Procedure was done in each

patient by keeping in mind the principles of surgery total removal of all infective components of the cysts. The spillage of cyst contents was avoided at time of surgery. Surgeries were done by surgeons having surgical experience minimum 10 years. Outcome was recorded with respect to operative time, post-operative pain, postoperative complication and postoperative hospital stay. All the data was recorded in the self-made proforma.

**Statistical Analysis:** Data was recorded and analyzed in SPSS version 20.0. Qualitative variables like gender, clinical presentation were calculated as frequencies and percentages. Mean and standard deviation were computed for numerical variables like age. Chi-square test was used and a $P \leq 0.05$ was deemed significant.

## 3. RESULTS

Total 21 patients underwent laparoscopic surgery, most common age group was 31-45 years (57.1%), followed by 46-60 years (28.6%), while less than 30 years of age were only 14.3% patients. Males were 15 and females were only 6. Pain was among 18 patient, 9 patients had fever, 15 had mass, 12 cases had cyst size >10cm and 9 had <10 cm (Table 1).

**Table 1. Demographic characteristics of the patients n=21**

| Variables | | Frequency | Percent |
|---|---|---|---|
| Age groups | 15-30 years | 3 | 14.3 |
| | 31-45 years | 12 | 57.1 |
| | 46-60 years | 6 | 28.6 |
| | Total | 21 | 100.0 |
| Gender | Male | 15 | 71.4 |
| | Female | 6 | 28.6 |
| | Total | 21 | 100.0 |
| Pain | No | 03 | 14.3 |
| | yes | 18 | 85.7 |
| | Total | 21 | 100.0 |
| Mass | No | 06 | 28.6 |
| | Yes | 15 | 71.4 |
| | Total | 21 | 100.0 |
| Fever | No | 12 | 57.1 |
| | Yes | 09 | 42.9 |
| | Total | 21 | 100.0 |
| Cyst size | 6-8cm | 09 | 42.9 |
| | 9-12 | 12 | 57.1 |
| | Total | 21 | 100.0 |

According to the outcome, cystic cavity infection was among 3 patients, 2 were seen with port site infection, 2 had bile leak and 2 patients were with residual cyst. Mean Operative time was 98.28+16.94 minutes. Mean VAS was 07.85±1.38 at 24 hours and 3.42±1.50 at 72 hours. Mean hospital stay was 6.57±1.78 days (Table 2).

**Table 2. Outcome of the patients n=21**

| Outcome | Frequency | Percent |
|---|---|---|
| Cystic cavity infection | 03 | 14.3% |
| Port site infection | 02 | 09.5% |
| Bile leak | 02 | 09.5% |
| Residual cyst | 02 | 09.5% |
| | **Mean±SD** | |
| Time of surgery | 98.28+16.94 minutes | |
| Pain at 24 hours (VAS) | 07.85±1.38 | |
| Pain at 72 hours (VAS) | 3.42±1.50 | |
| Hospital stay | 6.57±1.78 days | |

## 4. DISCUSSION

Surgeons around the world must be familiar with presentation and management of hydatid disease that is endemic within certain places, because it can be periodically encountered because of growing trends of travels and migrations. We observed that Pain occurred as a most frequent symptom 85.7% followed by mass in right upper abdomen (71.4%). Similarly Jani K et al. [11] reported that the commonest compliant was pain or heaviness of abdomen. Our findings were also consistent with the study of Samala DS et al. [12] as most common presenting symptom was pain in the abdomen in 22 patients (68.75%) followed by lump in the abdomen in 15 patients (46.87%). Palanivelu C et al. [13] also found majority of patients (51.5%) presented with pain. Liver hydatidosis is one of the most common causes of acute abdomen in endemic regions. Echinococcal infestation should be suspected in patients who present with an abdominal mass, pain, fever, jaundice, or anaphylaxis [13,14].

In this study the youngest age was 25 years with mean age of 46.7±1.3. However, within non-endemic regions, the individuals of all ages are generally equally affected. The Bayrak M et al. [15] also reported average age of patients 43.6 years with age range of 14–88 years. On other hand Samala DS et al. [12] also found most of the patients in the third and fourth decades of life. In this series male gender was predominantly affected (71.4%), same observed by Palanivelu C et al. [13] as 83.3%. However inconsistently Rooh-ul-Muqim KK et al. [16]

reported that females were commonest 62.79% and males were 37.20%. Others also observed female predominance [16,17]. In this study mean size of the cyst was 8.6 cm. Similarly Sah SP et al. [18] also reported that the mean diameter of the cyst was 9.2±2.72 cm in size. However Bayrak M et al. [15] reported that average cyst diameter was 13.6 ± 2.8 cm. This is similar to observation in other studies also (6.7-13 cm) [16].

Laparoscopic treatment of hydatid cyst becoming increasingly popular and is undergoing revolution parallel to progress in laparoscopic surgery. It has obtained sufficient evidence concerning its efficacy and safety [19]. In this study mean time of surgery was 98.28+16.94 minutes. However Mehmet Bayrak observed duration of surgery 49.8 ± 10.4 minutes. On other hand Rooh-ul-Muqim KK et al. [16] reported mean duration of surgery was 46.27±13.84 minutes. In our experience mean duration of surgery was 98.3±18 minutes. Longer duration of surgery in this study in comparison to literature is due to higher learning curve of recent modality of treatment in our set up. However Pradhan S et al. [18] found comparable findings regarding operative time as 84.81 ± 28.93 minutes.

In present study, cavity infection was found among 14.3% of cases, while SSI/Port site infection occurred among 9.5% of cases. In the study of Palanivelu C et al. [13] 37 patients underwent surgical intervention with a mean duration of surgery as 52 minutes and SSI/Port site infection was in 3% cases. While in the study of Bayrak M et al. [15] no case was found with Cavity infection and SSI/Port site infection. In the study of Pradhan S et al. [18] overall 26 cases underwent surgery and the SSI/Port site infection was found among 7.7% of cases.

In present study, biliary fistula/leakage occurred among 9.5% cases, mean duration of Hospital stay 6.57±1.78 days and Residual cyst among 9.5% cases. In the study of Palanivelu C et al. [13] the most common outcome measured was biliary fistula/leakage among 13.7% cases. In the study of Bayrak M et al. [15] mean duration of Hospital stay was 4.58±3.40 days. In the study of Pradhan S et al. [18] the most common outcome measured was Biliary fistula/leakage among 11.5% cases, followed by SSI/Port site infection among 7.7% cases, conversion among 7.7% cases and mean duration of hospital stay was 4.58±3.40 days. Rooh-ul-Muqim KK et al. [16] the most common outcome measured was Biliary fistula/leakage among 9.30% cases, followed by SSI/Port site infection among 6.97% cases, and Conversion among 6.97% cases. We observed that the laparoscopic treatment is best treatment option for this disease. Liver hydatid cyst is the commonest benign disorder among several nations. In contrast to the open surgical treatment, laparoscopic treatment can play an important role to improve the post-operative recovery, decreasing the morbidity and recurrence rate among patients having hepatic hydatid cyst [18].

## 5. CONCLUSION

Hydatid cyst of the liver can be safely operated through laparoscopic technique with certain precautions especial careful patient selection Surgeons should be familiar with this technique of dealing with Hydatid cyst & all basic protocols need to be followed. The procedure is feasible and safe, offering all the advantages of laparoscopic surgery.

## 6. LIMITATIONS OF THIS STUDY

- Limited number of patients treated
- Strict patient selection criteria in the early phase of development of this treatment

## 7. RECOMMENDATIONS

We recommend further studies in this field with larger number of patients

## CONSENT AND ETHICAL APPROVAL

As per international standard or university standard guideline participant consent and ethical approval has been collected and preserved by the authors.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

## REFERENCES

1. Ezer A, Zafer Nursal T, Moray G, Yildirim S, Karakayali F, Noyan T, Haberal M. Surgical treatment of liver hydatid cysts. HPB. 2006;8(1):38-42.
2. Bresson-Hadni SM, Mantion GA, Vuitton DA. Echinococcosis of the liver. In: Rodes JB, Blei AT, Reichen M, Rizzetto ED,

Editors. Textbook of Hepatology. 3rd Ed. Oxford: Blackwell Publishing. 2007;1047-57.
3. Ibrahim I, Tuerdi M, Zou X, Wu Y, Yasen A, Abihan Y, Xu Q, Balati M, Zhao J, Li T, Tuxun T. Laparoscopic versus open surgery for hepatic cystic echinococcosis: A systematic review and meta-analysis. Int J Clin Exp Med. 2017;10(12):16788-97.
4. Grosso G, Gruttadauria S, Biondi A, Marventano S, Mistretta A. Worldwide epidemiology of liver hydatidosis including the Mediterranean area. World Journal of Gastroenterology: WJG. 2012;18(13): 1425.
5. Tekin R, Avci A, Tekin RC, Gem M, Cevik R. Hydatid cysts in muscles: Clinical manifestations, diagnosis and management of this atypical presentation. Revista da Sociedade Brasileira de Medicina Tropical. 2015;48(5):594-8.
6. Cicek B, Parlak E, Disibeyaz S, Oguz D, Cengiz C, Sahin B. Endoscopic therapy of hepatic hydatid cyst disease in preoperative and postoperative settings. Dig Dis Sci. 2007;52(4):931–935.
7. Dolay K, Akbulut S. Role of endoscopic retrograde cholangiopancreatography in the management of hepatic hydatid disease. World J Gastroenterol 2014; 20(41):15253-15261.
8. Gavara CG, López-Andújar R, Ibáñez TB, Ángel JM, Herraiz ÁM, Castellanos FO, Ibars EP, Rodríguez FS. Review of the treatment of liver hydatid cysts. World Journal of Gastroenterology: WJG. 2015;21(1):124.
9. Acarli K. Controversies in the laparoscopic treatment of hepatic hydatid disease. HPB (Oxford). 2004;6(4):213–221.
10. Zaharie F, Bartos D, Mocan L, Zaharie R, Iancu C, Tomus C. Open or laparoscopic treatment for hydatid disease of the liver? A 10-year single-institution experience. Surg Endosc. 2013;27(6):2110–6.
11. Jani K. Spillage-free laparoscopic management of hepatic hydatid disease using the hydatid trocar canula. J Min Access Surg. 2014;10:113-8.
12. Samala DS, Gedam MC, Gajbhiye R. Laparoscopic management of hydatid cyst of liver with palanivelu hydatid system over a period of 3 years: A case series of 32 patients. Indian Journal of Surgery. 2015;77(3):918-22.
13. Palanivelu C, Jani K, Malladi V, Senthilkumar R, Rajan PS, Sendhilkumar K, Parthasarthi R, Kavalakat A. Laparoscopic management of hepatic hydatid disease. JSLS: Journal of the Society of Laparoendoscopic Surgeons. 2006;10(1):56.
14. Beecherl EE, Bigam DL, Langer B, et al. Cystic diseases of the liver. In: Zuidema GD, Yeo CJ, Eds. Shackelford's Surgery of the Alimentary Tract. 5th Ed, Vol III. Philadelphia, PA: WB Saunders Company. 2000;452–460.
15. Bayrak M, Altıntas Y. Current approaches in the surgical treatment of liver hydatid disease: Single center experience. BMC Surgery. 2019;19(1):95.
16. Rooh-ul-Muqim KK, Khalil J, Gul T, Farid S. Laparoscopic treatment of hepatic hydatid cyst. J Coll Physicians Surg Pak. 2011;21(8):468-71.
17. Moradi M, Rampisheh Z, Roozbehani M, Razmjou E. A retrospective study of hydatid cysts in patients undergoing liver and lung surgery in Tehran, Iran. Heliyon. 2019;5(6):e01897.
18. Sah SP, Adhikary S, Agrawal CS, Gupta R, Ghimire A. Laparoscopic management of liver echinococcal cyst at BP Koirala Institute of Health Sciences Dharan, Nepal an institutional review. Health Renaissance. 2015;13(1):86-94.
19. Bhadreshwara KA, Amin AB, Doshi C. Comparative study of laparoscopic versus open surgery in 42 cases of liver hydatid cyst. Int Arch Integr Med. 2015;2:30-5.



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