



COMPARISON OF EXTERNAL TUBE DRAINAGE VS OMENTOPEXY IN LIVER HYDATID AT A TERTIARY CARE HOSPITAL IN KASHMIR

Dr Asgar Aziz	Senior resident, Department of General Surgery, Government Medical College Srinagar, J&k, India.
Dr Ahlam Manzoor Khan*	Postgraduate resident, Department of General Surgery, Government Medical College Srinagar, J&K, India.*Corresponding Author
Dr Syed Mushtaq Ahmad Shah	Professor, Department of Surgery, Government Medical College Srinagar, J&k,India
Dr Araf Manzoor Khan	Prefinal Mbbs, ASCOMS, Jammu University

ABSTRACT

Introduction: Hydatid disease commonly known as Cystic Echinococcosis is a parasitic infestation caused by flatworm *Echinococcus Granulosus*. The *Echinococcus Granulosus* has been described as the most frequent cause of Hydatid cyst. Three broad morphological forms of *Echinococcus* are recognized clinically: Cystic Echinococcosis caused by *Echinococcus Granulosus*, Alveolar Echinococcosis caused by *Echinococcus multilocularis* and Polycystic Echinococcosis Caused by *Echinococcus Oligarthus*. Hydatid disease is characterized by cystic lesions occurring in different parts of body most commonly liver (60-70%), lungs (10-15%). Unusual sites of involvement include muscles (3-5%), bones (2%), kidney (1%), spleen (2%), diaphragm (1%), ovary (0.2%). The peritoneal cavity, thyroid, breast, gall bladder, omentum are rarely involved. **Materials and methods:** This study was a prospective observational study conducted in Postgraduate Department of General Surgery, Government Medical College, Srinagar, J&K for a period of two years. This study included 28 patients after fulfilment of inclusion and exclusion criteria. Ethical clearance was obtained from institutional ethical committee. **Results:** In this study 28 cases of Hydatid liver were studied. In our study external tube drainage was done in 16 cases (57.1%), 9 cases (32.1%) omentopexy was done and capitonnage in 3 cases (10.7%). In our study patients who underwent external tube drainage had wound infection in 4 cases (25%) and infection of residual cavity in 3 cases (18.8%). **Conclusion:** Majority of complications occurred in patients being treated by external tube drainage. Patients with external tube drainage had prolonged hospital stay.

KEYWORDS : Hydatid disease, Hydatid Liver, External tube drainage, Omentopexy

Introduction:

Hydatid disease is a disease that has been known since antiquity and was described by Hippocrates with the particular term "Liver filled with water" followed by famous Arabian physician Al-rhazes who wrote on hydatid cyst of liver about 1000 years ago. The life cycle of parasite was acknowledged by Dew et al.¹ Life cycle of the parasite was elucidated by Haubner in 1855 and it was confirmed as a Zoonosis in 1862 by Krabbe and Finsen².

Hydatid disease commonly known as Cystic Echinococcosis (CE) is a parasitic infestation caused by flatworm *Echinococcus granulosus*.³ The *Echinococcus granulosus* has been described the most frequent cause of Hydatid cyst.⁴ Three broad morphological forms of *Echinococcus* are recognised clinically: Cystic Echinococcosis caused by *Echinococcus Granulosus*, Alveolar Echinococcosis caused by *Echinococcus Multilocularis* and Polycystic Echinococcosis caused by *Echinococcus Vogeli* or *Echinococcus Oligarthus*. Until 2005, only 4 species were recognized but a 5th species *Echinococcus Shiquicus* has now been described in small mammals from Tibetan plateau, although its zoonotic potential is unknown.⁵⁻¹⁰ Hydatid disease is a major endemic health problem in sheep and cattle rearing areas mainly in Mediterranean countries particularly Greece, Middle East, Australia, Portugal, Northern China, South America and India.¹¹⁻¹²

Hydatid disease is characterized by cystic lesions occurring in different parts of body most commonly liver (60-70%), lungs (10-15%).

Unusual sites of involvement include muscles (3-5%), bones (2-5%), kidney (1-3%), spleen (1-2%), diaphragm (1%), ovary (0.2%).¹³⁻¹⁶ The peritoneal cavity, thyroid, breast, gall bladder, omentum are rarely involved.¹⁷

No site in body is completely immune from it except for hair, nails and teeth. The growth of cyst in liver is variable ranging from 1mm to 5mm in diameter/year.¹⁸

Dogs, Jackals are the definitive hosts for *Echinococcus Granulosus*,

sheep and goat are the intermediate hosts and human beings the accidental hosts.¹⁹

The symptoms are mostly dependent on organ involved. Abdominal pain is the most common symptom in hepatic hydatidosis followed by palpable mass and jaundice.²⁰ The liver cysts may be asymptomatic for years and occasionally spontaneous regression has been noted. More commonly the disease is slowly progressive and symptoms as well as complications may arise.²¹

Various investigations which help in diagnosing hydatid liver apart from biochemical investigations are ELISA and imaging techniques like Ultrasonography, CECT abdomen and pelvis. Differential leucocyte count for eosinophilia found to be adjunct not confirmatory.²²

Treatment of hydatid disease consists of medical, radiological and surgical.²³ The principal treatment of hydatid cysts is surgical. However pre and post-operative courses of albendazole and praziquantel should be given in order to sterilize the cyst, decrease chance of anaphylaxis and to reduce the risk of recurrence.²⁴

Surgery remains the gold standard treatment for hydatid disease. The aim of the surgical intervention is to inactivate the parasite, evacuate the cyst along with resection of the germinal layer, to prevent peritoneal spillage of scolices and to obliterate the residual cavity.²⁵⁻²⁶

Several surgical techniques have been proposed for hydatid disease like conservative, radical surgeries.²⁷ Surgery is the most effective treatment applicable. It removes the parasite, it manages the cystobiliary communication and the cystic cavity.²⁸ Radical procedures are open cystectomy, near total open cystectomy, subadventitial cystectomy, non anatomic liver resection, anatomic liver resection, completion cystectomy, cystectomy and total cystopericystectomy.²⁹

The rationale for conservative surgery is that (a) It can be performed by general surgeons (b) Liver parenchyma is not entered and there is no threat to hepatic vasculature and bile ducts (c) A specialised team for

hepatobiliary surgery is not necessary (d) If performed correctly the mortality, morbidity and recurrence rate are acceptable (E) It is tissue sparing.²⁷ Minimally invasive procedures such as PAIR and laparoscopic surgery have been included in our armamentarium against the disease.³⁰ Though the open technique is still first line of treatment. The choice of surgical therapy depends on patients general condition, the number and localization of cysts and the surgeons expertise.³¹⁻³³

AIMS AND OBJECTIVES

1. Evaluation of management options of residual cystic cavity in hydatid liver.
2. To determine the treatment outcome.

MATERIAL AND METHODS

Our study was a prospective observational study conducted in Postgraduate Department of General Surgery (SMHS Hospital), Government Medical College, Srinagar, J&K for a period of 2 years. This study included 28 patients after fulfilment of inclusion and exclusion criteria. Ethical clearance was obtained from Institutional Ethical Committee, Government Medical College & Associated Hospitals, Srinagar.

Inclusion criteria:

All diagnosed cases of Liver hydatid disease involving adult age group requiring surgery.

Exclusion criteria:

1. All non-parasitic cysts including simple cysts.
2. Extra abdominal hydatid disease.
3. Malignant hydatid disease (Alveolar Echinococcosis).
4. Recurrent hydatidosis.

METHODS OF DATA COLLECTION:

This study was conducted after approval from hospital ethical review committee. The patients were enrolled in the Department of General Surgery (SMHS Hospital), Government Medical College Srinagar. All patients >18 years of age were assessed by detailed history taking and thorough clinical examination.

Apart from base line investigations like CBC, KFT with serum electrolytes, blood sugar, LFT, Coagulogram, Urine routine, hydatid serology and chest roentogram, patients were subjected to further investigations like Ultrasound abdomen, CECT abdomen and pelvis and MRCP in indicated cases to confirm the diagnosis.

Once the diagnosis was confirmed, Patients were counseled for further management and treatment options available in our Hospital were discussed with the patient and the close attendant (relative). The patients were managed by surgical techniques as per recent guidelines.

The Patients were followed up for 6 months during the period of study. First follow up was after 1 week of discharge, next follow up was after 2 weeks of discharge then after 1 month followed by 6 months after discharge. All detailed data was entered on a pre-designed proforma and was analyzed.

Statistical Methods:

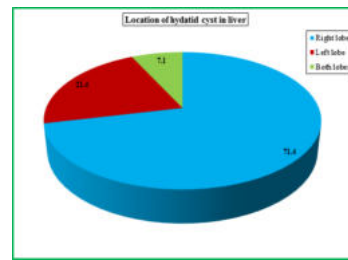
The recorded data was compiled and entered in a spread sheet (Microsoft Excel) and then exported to data editor of SPSS Version 20.0 (SPSS Inc, Chicago, Illinois, USA). Continuous variables were expressed as Mean±SD and categorical variables were summarized as frequencies and percentages. Graphically the data was presented by bar and pie diagrams.

RESULTS:

In our study right lobe of liver is most commonly involved in 20 cases (71.4%) followed by left lobe in 6 cases (21.4%) and both lobes in 2 cases (7.1%).

Table 1: Location of hydatid cyst in liver

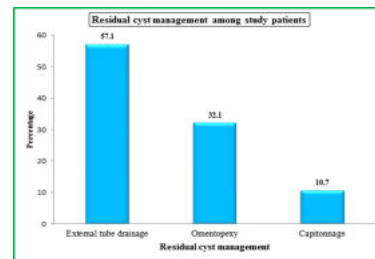
Lobe involved	Number	Percentage
Right lobe	20	71.4
Left lobe	6	21.4
Both lobes	2	7.1
Total	28	100



External tube drainage for management of residual cavity was done in 16 cases (57.1%) followed by omentopexy in 9 cases (32.1%) and capitonnage in 3 cases (10.7%) as shown in Table and Graph 2.

Table 2: Residual cyst management among study patients

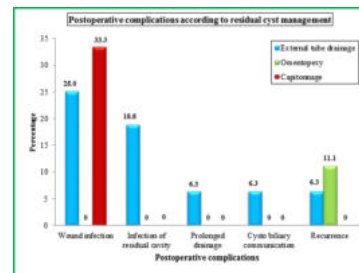
Residual cyst management	Number	Percentage
External tube drainage	16	57.1
Omentopexy	9	32.1
Capitonnage	3	10.7
Total	28	100



Majority of complications in our study occurred in external tube drainage group. Wound infection was seen in 4 cases (25%) followed by infection of residual cavity in 3 cases (18.8%) and recurrence in 1 case (6.3%). Recurrence occurred in 1 case of omentopexy (11.1%). Wound infection occurred in one case of capitonnage (33.3%)

Table 3: Postoperative complications according to residual cyst management

Postoperative complications	External tube drainage		Omentopexy		Capitonnage	
	No.	%age	No.	%age	No.	%age
Wound infection	4	25.0	-	-	1	33.3
Infection of residual cavity	3	18.8	-	-	-	-
Prolonged drainage	1	6.3	-	-	-	-
Cysto biliary communication	1	6.3	-	-	-	-
Recurrence	1	6.3	1	11.1	-	-



Mean duration of hospital stay was 5.1±2.79(3-12 days) with prolonged hospital stay in patients being managed by external tube drainage. In 19 cases (63.3%) duration of stay was 3-5 days, duration was 5-8 days in (23.3%), duration was more than 8 days in (13.3%) cases.

Table 4: Postoperative hospital stay (Days) among study patients

Postoperative hospital stay (Days)	Number	Percentage
3-5 Days	19	63.3
5-8 Days	7	23.3
> 8 Days	2	6.66
Total	28	100

Mean±SD (Range)=5.1±2.79 (3-12 Days)

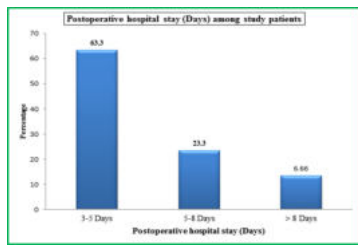


Table 5: Postoperative complications according to residual cyst management

Postoperative complications	External tube drainage		Omentopexy		Capitonnage	
	No.	%age	No.	%age	No.	%age
Wound infection	4	25.0	-	-	1	33.3
Infection of residual cavity	3	18.8	-	-	-	-
Prolonged drainage	1	6.3	-	-	-	-
Cysto biliary communication	1	6.3	-	-	-	-
Recurrence	1	6.3	1	11.1	-	-
Overall	10	62.5	1	11.1	1	33.3
P-value	External tube drainage vs Omentopexy		Omentopexy vs Capitonnage		Capitonnage vs External tube drainage	
	0.013*		0.455		0.043*	

Discussion:

Our study showed right lobe harboured cyst in 20 cases (71.4%) followed by left lobe 6 cases (21.4%) and both lobes in 2 cases (7.1 %). This was comparable to study by RVS Yadav et al(1989)³⁴ 65% cyst were in right lobe and 18% left lobe. Ahmet A et al(1999)³⁵ study revealed 78% were in right lobe and 13% left lobe. Thus our study is comparable to others and comes to conclusion that right lobe is involved commonly.

All patients in our study were treated surgically. Laparoscopic hydatid cystectomy for hydatid liver was done in 10 cases (33.3%) and in 17 cases (56.7%) cases open hydatid cystectomy was done. Open hydatid cystectomy with left lateral segmentectomy was done in 1 case (3.3%) . In my study i encountered 1 case of hydatid spleen and 1 case of renal hydatid. Splenectomy was done in 1 case (3.3%) and nephrectomy in 1 case (3.3%).

Our study had 28 cases of hydatid liver in which residual cavity was managed by external tube drainage in 16 cases (57.1%), 9 cases (32.1%) omentopexy was done and capitonnage in 3 cases (10.7%) . Study by Ahmet (1999) et al³⁶ shows 40% underwent external drainage and 13.2% underwent omentopexy. On comparison we found that management of residual cavity with external tube drainage was common procedure adopted to deal with pathology.

In our study group 1 (External tube drainage) wound infection was seen in 4 cases (25%) which was comparable to Xynos (1991) et al³⁷ study where wound infection was seen in 12.2% cases. Infection of residual cavity was seen in 3 cases (18.8%) compared to Sozen et al (2011)³⁸ (12.5%). Prolonged drainage, CBC, recurrence was seen in 1 case each (6.3%) . Our study was comparable to Ahmet et al (1999)³⁶ where CBC was seen in 8.2% and recurrence in 5.9% cases. Wound infection was higher in group 1. Tubes may introduce infection from external environment into body. Wound infection in our study was treated by daily dressings and antibiotics after culture sensitivity. In our study patients with infection of residual cavity had prolonged drainage of pus from tube.

Our study group 2 (Omentopexy) had recurrence in 1 case (11.1%) which was comparable to Ahmet et al³⁶ (1999) in which recurrence was seen in 6% cases. Wound infection, CBC was absent in this group. It is due to excellent absorption and sealing property of omentum decreasing chances of post operative biliary leak. Omentum helps in healing of raw surfaces, resorption of serosal fluid and attracting macrophages to septic foci.

Our study group 3 (Capitonnage) had wound infection in 33.3% cases comparable to xynos et al³⁷ where wound infection was seen in 20% cases.

In our study complications were more frequent in external tube drainage group (P<0.05) as compared to omentopexy (P>0.05). Our study was comparable to Ahmet A et al (1999)³⁶ where significant complications occurred in external tube drainage group (P<0.05).

Mean duration of hospital stay in our study was 5.1+Mean duration of hospital stay in our study was 5.1±2.79 (3-12 days). Absence of additional tube drain helped in early ambulation and early discharge of omentopexy group patients. Hospital stay was prolonged in patients being treated by external tube drainage in comparison to Ahmet et al (1999)³⁶

Conclusion:

The most common organ involved in hydatid disease is Liver. Right lobe is most commonly involved. Abdominal pain is the most common presenting complaint. Surgery is the gold standard for management of hydatid disease. Residual hepatic hydatid cyst was managed by external tube drainage, omentopexy, capitonnage. Most of the complications were encountered with external tube drainage group. Wound infection and infection of residual cavity were the main complications. Hospital stay was prolonged for patients who underwent external tube drainage.

REFERENCES:

- Katn YB (1977) Intra-biliary rupture of hydatid cyst of liver. Ann Rev Coll Surg Engl 59:108-114
- Abu-Eshy S (1999) Hydatid cyst associated with pregnancy: A case report and review of literature Ann Saudi Med 19 : 130-131
- Barnes SA, Lillieome KD. Liver abscess and hydatid cyst disease In: Zinner Mj-Schwartz S.I-Ellis it Maingots abd. Operation 10th edition, Stanford ,Appleton and large.1997;1513-46
- Aksu MF, Budak E, Ince U, Aksu C. Hydatid cyst of the ovary. Arch Gynecol Obstet. 1997; 261(1):51-3.
- McManus OP, Zhang W, Li J, Bartley PB. Echinococcosis Lancet 2003; 362: 1295-304
- Ci-Peny J, Mcmanus PD, Malcom J. Liver alveolar echinococcosis in China. Clinical aspect with relative basic research. World J Gastroenterol 2005; 11 :4611-17
- Raether W, Hanel H. Epidemiology, Clinical manifestations and diagnosis of zoonotic cestode infection; an update Parasitol. Res 2003; 91: 412-438
- Thompson RC, Lymbery AJ, Constantine cc. Variations in echinococcus: towards a taxonomic revision of genus. Adv Parasitol 1995; 145-76
- Khuroo MS. Hydatid disease: current status and recent advances Ann Saudi Med 2002; 22: 56-64
- Xiao N, Qiu J, Nakao M, et al. Echinococcosis Shiquicus M. Sp A taenid cestode from Tibetan fox and plateau Pika in china. Int J Parasitol. 2005; 35: 693-701
- Doty JE, Tompkins RK (1989) Management of cystic disease of the liver. Surg Clin North Am 69:285-295
- Safioles M, Misiakos E and Manti C (1994). Diagnostic evaluation and surgical treatment of hydatid disease of the liver. World J Surg 18: 859
- Kir A, Baran E: Simultaneous operation for hydatid cyst of right lung and liver. Thorac Cardiovasc Surgeon. 1995, 43: 62-64. 10.1055/s-2007-1013772
- Nell M, Burgkart RH, Gradl G, et al. Primary extrahepatic alveolar echinococcosis of the lumbar spine and the psoas. Ann Clin Microbiol Antimicrob 2011; 10:13.
- Kiresi DA, Karabacakoglu A, Odev K, Karakose S. Uncommon locations of hydatid cysts. Acta Radiol 2003; 44:622-36.
- Gharbi HA, Hassine W, Brauner MW, Dupuch K 91981) Ultrasound examination of the Hydatid Liver. Radiology 139: 459-463
- Daali M, Hssaïda R, Zoubir M, Hda A, Hajji A. Peritoneal hydatidosis: a study of 25 cases in Morocco. Sante. 2000;10:255-60.
- Zhang W, Jin Li, Donald P, Manus M. Concepts in immunology and diagnosis of hydatid disease. Clinical microbiology review. 2003; 16(1) : 18-36
- Joshi DD, Joshi AB, Joshi H. Epidemiology of echinococcosis in Nepal. Southeast Asian J Med public health 1997; 28 Suppl 1 :26-31
- Nait Silmane N, Taieb M, Khiali R, Rabehi H, Bekhouche R and Bendjaballah. A huge primary hydatid cyst of uterus: A case report. Journal of universal Surgery 2018; vol.6, No.2 :2254-55
- Narasimharao, K.L., Venkateswarluk, K., Mitta, S.K. and Metha, S. (1987) Hydatid disease of the spleen treated by cyst enucleation and splenic salvage. Journal of Pediatric Surgery, 22, 138.
- Sehitogullari A. Our results in surgical treatment in hydatid cysts of lungs. Eur J Gen Med 2007; 4(1)
- Romero Torres R, Campbell JR. An interpretive review of the surgical treatment of hydatid disease. Surg Gynecol Obstet. 1965; 121 : 851-64
- Moller S, Kairies M, Krause BT. Echinococcosis- case report and review of the literature. Zentralblgynkol 1998;120: 79-82
- Men S, Hekimoglu B, Yuce soy C, Arda IS, Baran L. Percutaneous treatment of hepatic hydatid cysts: An alternative to surgery. Am J Roentgenol. 1999; 172: 83-89
- Bickel A, Daud G, Urbach D. Laparoscopic approach to Hydatid liver cyst: is it logical? Physical experimental and practical aspects. Surg. Endosc. 1998; 12 :1073-74
- Schwartz SI. Liver. In: Schwartz SI, Shires GT, Spencer FC, DALY JM, Fischer JE, Avrey CG. Principles of Surgery. 7th ed, New York, McGraw-Hill 1999; pp:1403-5
- Franquet T, Montes M, Lecumberri J, Espraza J, Bescos JM. Hydatid disease of spleen.

- AJR 1990; 154: 525-28
- 29) Gharaibeh KIA. Laparoscopic excision of splenic hydatid cyst. *Postgrad Med J* 2001; 77 : 195-196
 - 30) Stamatakos MK, Misiakos EP, Kouvaraki M, Manti CP, Felekouras ES. Hydatid disease of liver a continuing surgical problem. *Arch Surg.* 2006; 141: 1101-08
 - 31) Sekmenli T, Koplay M, Sezgin A. Isolated hydatid cyst: clinical, radiologic and pathologic findings. *Journal of Paediatric Surgery* 2009; 01:003
 - 32) Cattorini L, Trastulli S, Milani D, Cirocchi R, Avenia N, Sciannameo F. Ovarian hydatid cyst: A case report. *International Journal of Surgery case reports* 2011; 100-102
 - 33) Khuroo MS, Wani NA, Javid G, Khan BA, Yattoo GN, Shah AH, Jeelani SG. Percutaneous drainage compared with surgery for hepatic hydatid cysts. *The New England Journal Of Medicine.* 2012; Vol. 337, No. 13: 881-85
 - 34) Yadav RVS, Mintz M, Wig JD, Kaushik SP. Management of hydatid cyst of the liver. *Indian Journal Of Surgery* 1989; 51: 187-190
 - 35) Philip S craig, Donald P McManus, Hector H Garcia et al, Prevention and control of cystic echinococcosis. *Lancet Surg* vol7 June 2007
 - 36) Ahmet A Balik, MD; Mahmut Basoglu MD; Fehmi Celebi et al. Surgical treatment of Hydatid disease of Liver. *ARCH SURG/ vol134, Feb 1999.*
 - 37) Xynos E, Pechilvanides G, Tzortzinis A, Papageorgiou A, Vassilakis J. Hydatid disease of liver. Diagnosis and Surgical treatment. *HPB Surgery.* 1991; 4(1): 59-67
 - 38) Sozen S, Emir S, Tukenmez M, Topuz O, The results of Surgical treatment for hepatic hydatid disease, *hippokratia*; 2011, 15,4: 327-329