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Research Paper

A Comparative Study Between Laparoscopic Versus Open Deroofing in 30 Cases of Liver Hydatid Cyst

Medical Science

KEYWORDS :

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Introduction

Hydatid disease is endemic mainly in the mediterranean countries,the middle east,south America, india, northern china and other sheep rearing areas;however ,owing to increased travel and tourism all over the world, it can be found anywhere,even in developed countries.

The disease is transmitted by feco-oral route with humans being its intermediate and terminal host.

Liver is the commonest site of affection (55-70 %) followed by lung (18-35 %). The two organs can be affected simultaneously in about 5-13% of cases[4]. Spontaneous rupture may occur in bare area of liver and in lesser omentum owing to path of least resistance and lack of peritoneum.

Surgery remains the gold standard in terms of therapy for patients with echinococcosis despite significant economic costs, advances in medical treatment and interventional radiology. In the last decade ,laparoscopic treatment of hepatic hydatid disease has been increasingly popular and has undergone a revolution parallel to the progress in laparoscopic surgery. This study presents our experience with 30 cases of liver hydatid cyst comparing laparoscopic approach and open approach for surgery during a period of two and a half years at our institute.

Materials and Methods

Methods:

- This is a study of 30 patients with a diagnosis of liver hydatid cyst treated during the period of June 2010 to december 2012 at Civil Hospital, Ahmedabad. They were treated either by laparoscopic approach or by open method for liver hydatid cyst.
- Data was collected in a predesigned proforma .

Inclusion criteria:

1. Single superficial cyst that may rupture
2. Large cyst with multiple daughter cysts
3. Cysts in communication with the biliary tree
4. Infected cysts
5. Cysts giving compression to the near vital organs

Exclusion criteria:

1. Deep intraparenchymal cysts
2. Posterior Cyst
3. More than 3 cysts
4. Cysts with tick and calcified walls.
5. Cysts characterized by heterogeneous complex mass (Gharbi type 4)
6. Cyst less than 3 cm in diameter
7. Serious coagulation abnormalities
8. Patient unfit for laproscopic approach
9. presence of extra-hepatic hydatid cyst.

SUBJECTS:

All patients with hydatid cyst who were admitted to our hospital between June 2010 and December 2012 were considered candidates for the study. A patient was randomized for laparoscopic or open management of hydatid cyst of liver if hydatid cyst was confirmed at Sonographic or CT examination. Patients were given albendazole treatment 10mg/kg/day for 4 days pre-operatively.

Informed consent was obtained from all participating patients. Pre-op investigations in the form of ECG, chest x ray , routine blood investigations like complete blood count, renal and liver function tests were done. 30 patients fitting the inclusion criteria were randomly allocated to two groups, for surgical treatment of liver hydatid cyst by either laparoscopic or open approach. Palanivelu hydatid system(PHS) was used for the laparoscopic approach as described previously.

Pre-op preparation

Antibiotic Policy:

At presentation all patients were started on albendazole therapy for a period of 4 days pre-operatively at a dosage of 10mg/kg/day.

Pre-operative antibiotic in the form of inj cefotaxim 1 gm iv,one dose was given to each patient 30 min. before surgery.

Intervention:

In 15 patients,laparoscopic approach using the palanivelu hydatis system(PHS) and in other 15 patients, open approach for the management of hepatic hydatid cyst was done.

Patient Follow-up and Outcome:

All patients underwent clinical follow-up and monitoring during daily rounds until they were discharged from the hospital:

1) Post operative analgesics:all patients were given i.v. inj diclofenac sodium aqueous 50mg 8 hrly for 2 days and inj tramadol 100mg 8hrly for 2 days and switched over to oral analgesics after 2 days. in case the patient complained of severe pain ,i.v. analgesics were continued for a longer duration.
2) Post operative antibiotics:all patients were given inj cefotaxime 1gm i.v.8 hrly,inj amikacin 500mg i.v. 12hrly and inj metronidazole 400 mg i.v. 8 hrly for 3 days and switched over to oral antibiotics after that in uneventful post-op course.in case of any complications,i.v. antibiotics were continued further as per requirement.
3) Post operative criteria for starting of oral intake: patients were given sips to liquids orally from 1st post op day and started on soft diet gradually.
4) Post operative criteria for drain removal: the daily drain output, its consistency, colour were monitored and drain was removed only when the output became < 20ml/day for 2 consecutive days and the drain fluid colour was non-

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bilious. If there was bile stained fluid in the drain , patient was sent home after cutting the drain to very small size and the output was allowed to collect in a stomy bag applied at drain site. patient was asked to do regular drain output monitoring and the drain was removed when the output became insignificant. dressing was applied at drain site in a way to help it close with time.

5) Discharging criteria:once patient was having no pain and wound infection and the drain was removed ,patient was discharged and asked to come for follow up usg and x ray after 1 month.

Patient outcome, including length of hospital stay, complications related to the procedure, and treatment failure and death were recorded.

MATERIALS:

- A predesigned proforma [attached]
- Reference surgical textbooks.
- Journals and publications available in college library as well as on internet for comparisons and references.

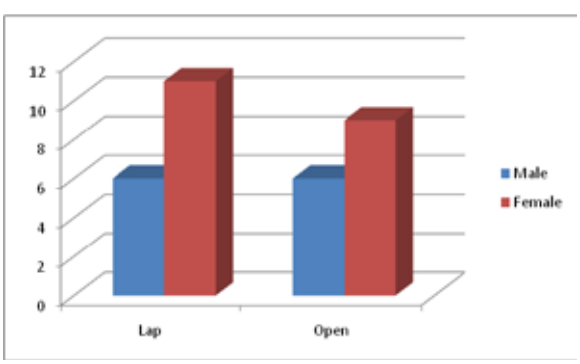
OBSERVATIONS

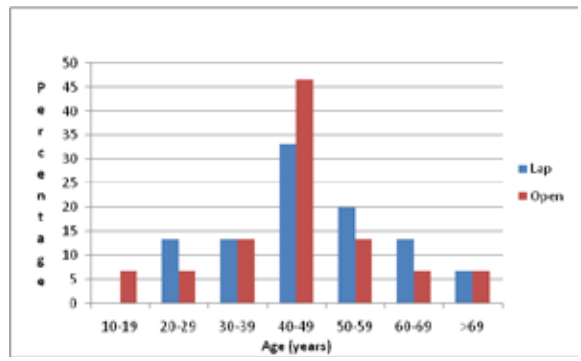
Between June 2010 and December 2012, all patients of hydatid cyst were assessed for eligibility for participation in the study. Out of this 30 patients to be randomized into the two surgical treatment groups. None was lost to follow-up or had their treatment discontinued. Some patients were diagnosed with liver hydatid cyst with extra hepatic disease as well and >3 liver hydatid cysts which were excluded from study. The 30 patients included in the study were diagnosed to have hydatid cyst, commenced on albendazole 10mg/kgBW/day. 15 patients were randomized into each of the open surgical and laparoscopic surgical groups.

TABLE 1 & 2: Age & Sex distribution

	Number of patients	
	Lap	Open
10-19	-	1(6.6%)
20-29	2(13.33%)	1(6.6%)
30-39	2(13.33%)	2(13.33%)
40-49	5(33.33%)	7(46.66%)
50-59	3(20%)	2(13.33%)
60-69	2(13.33%)	1(6.6%)
>69	1(6.6%)	1(6.6%)
Total	15	15

Sex	Lap	Open
Male	6	6
Female	11	9

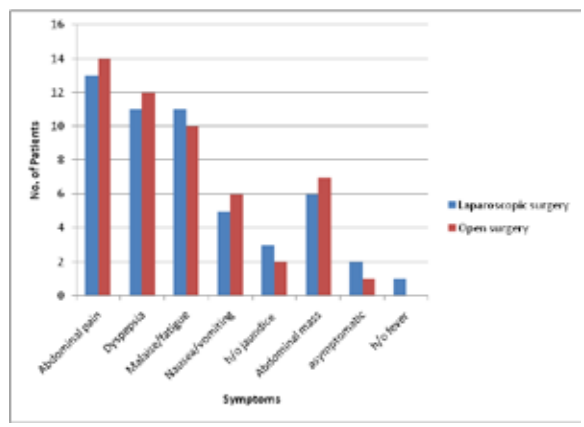




There was no statistically significant difference in patient demographics of the two groups. In present series, age ranges from 10 to 70 years. peak incidence is in 4th and 5th decade of life. The study also shows incidence in female to be more than in males. This is because females are mainly involved in sheep rearing and taking care of poultry at home and otherwise also.

TABLE 3: Presentation of patients

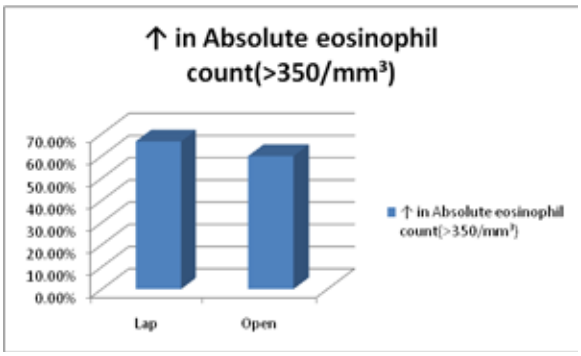
	Laparoscopic surgery	Open surgery
Abdominal pain	13	14
Dyspepsia	11	12
Malaise/fatigue	11	10
Nausea/vomiting	5	6
h/o jaundice	3	2
Abdominal mass	6	7
Asymptomatic	2	1
h/o fever	1	-



The clinical characteristics and laboratory results of the 30 patients were studied. Features such as incidence of epigastric or right upper quadrant abdominal pain,dyspepsia and incidence of others symptoms were analysed. There was no statistically significant difference between the two groups identified in symptomatology

Table 4: Lab values

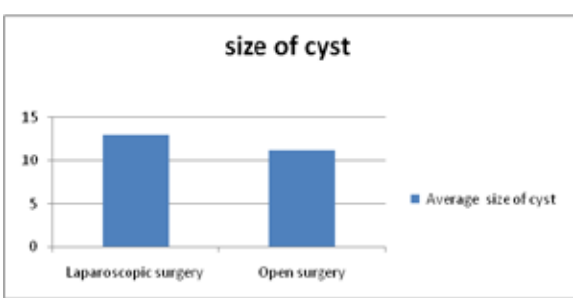
Investigations	Laparoscopic surgery	Open surgery
Haemoglobin(gm/dl)	11.4(8.9-14)	10.76(8.6-13.7)
WBC count	9100(7890-11200)	7600(6200-11000)
Total bilirubin	1.6(0.4-7.7)	1.4(0.5-6.5)
S.alkaline phophatase	218(80-650)	200(88-560)
S.alanine aminotransferase(SGPT)	45.7(25-102)	45.6(25-110)
↑ in Absolute eosinophil count(>350/mm^3)	10 patients(66.6%)	9 patients(60%)

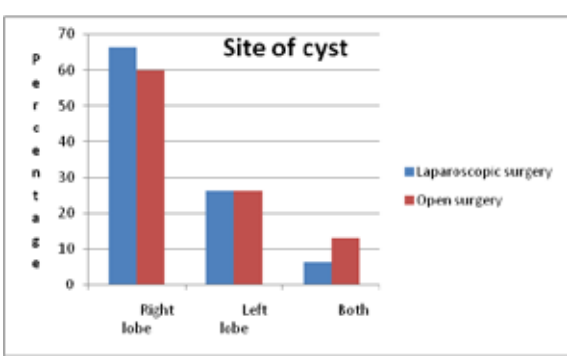


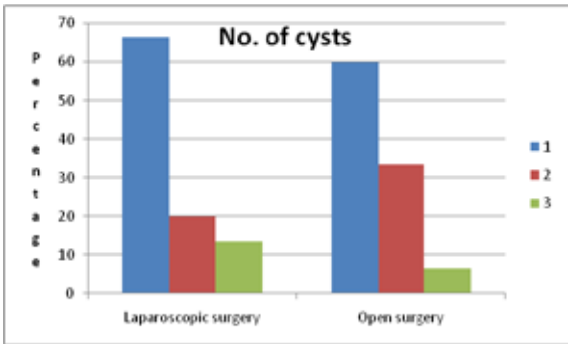
Incidence of leukocytosis, incidence of bilirubin level and absolute eosinophil count which is commonly elevated in patients with hydatid cyst and haemoglobin level were analyzed. There was no statistically significant difference between the two groups identified.

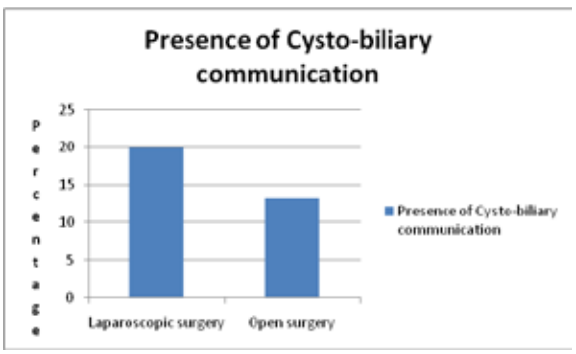
TABLE 5: Characteristics of cysts

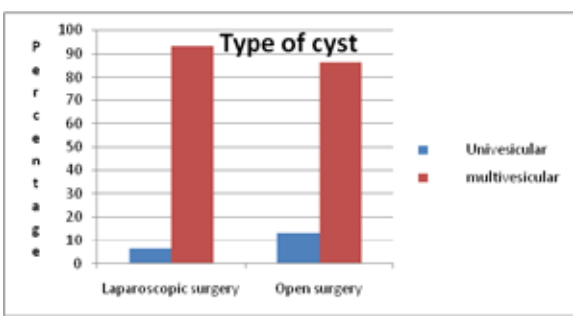
	Laparoscopic surgery	Open surgery
Average size of cyst	13 cm (8-19cm)	11.3cm(9-16cm)
Type of cyst		
Univesicular	1(6.6%)	2(13.3%)
multivesicular	14(93.4%)	13(86.7%)
Site of cyst		
Right lobe	10(66.6%)	9(60%)
Left lobe	4(26.6%)	4(26.6%)
Both	1(6.6%)	2(13.3%)
No of cysts per patient		
1	10 (66.6%)	9(60%)
2	3(20%)	5(33.3%)
3	2(13.3%)	1(6.6%)
>3	Excluded from study	Excluded from study
Presence of Cysto-biliary communication	3(20%)	2(13.3%)







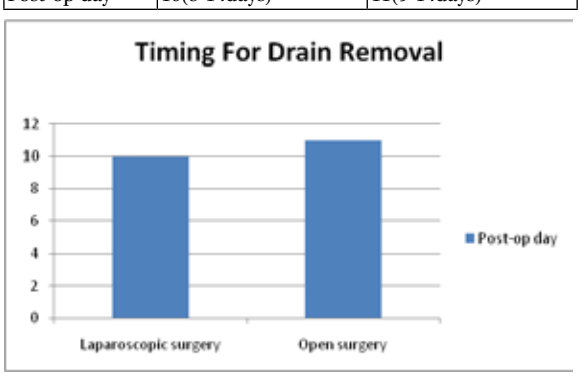




The various characteristics of the cyst like the average size, type of cyst, site and no. of cyst were compared among the two groups and were not found to be statistically different.

TABLE 6: Timing for Post op drain removal

	Laparoscopic surgery	Open surgery
Post-op day	10(8-14days)	11(9-14days)



The daily drain output, its consistency, colour were monitored and drain was removed only when the output became < 20ml/day for 2 consecutive days and the drain fluid colour was non-bilious. The timing for post-op drain removal was not statistically different for the two groups.

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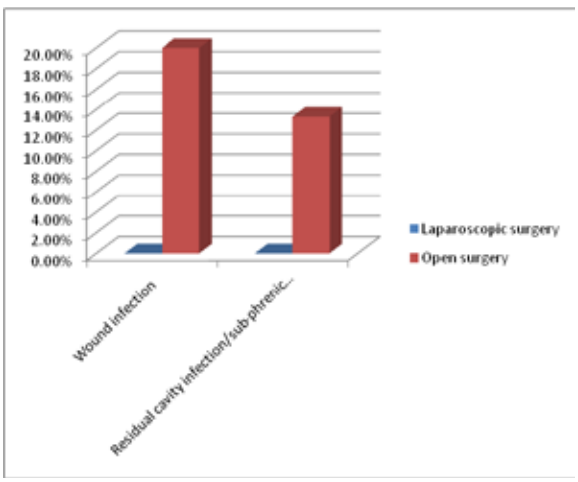
TABLE7: Complications of procedure

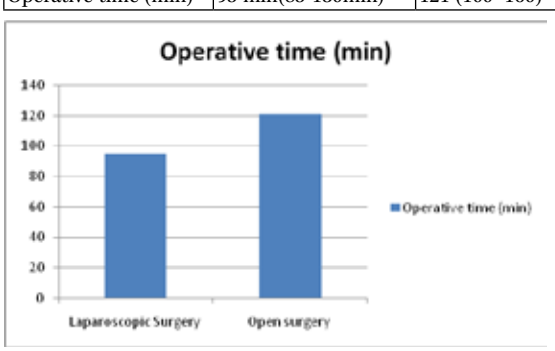
	Laparoscopic surgery	Open surgery
Complications of procedure		
Wound infection	-	3(20%)
Intra-op hemorrhage	1(6.6%)	-
Biliary leaks	4(26.6%)	3(20%)
Residual cavity infection/ sub-phrenic abscess	-	2(13.3%)
Adjacent organ injury	-	-
Chest problems	1(6.6%)	1(6.6%)



There was no significant difference in post procedure complications except that the incidence of wound infection was significantly more in open surgery as compared to no wound infection at all in laparoscopic group. Due to this, the antibiotic was used for a longer time in open surgery group as compared to laparoscopic surgery group. Also,this led to a longer hospital stay also in open surgery group.There was no marked difference in post procedure bile leaks in the two groups.

TABLE 8- Operative time

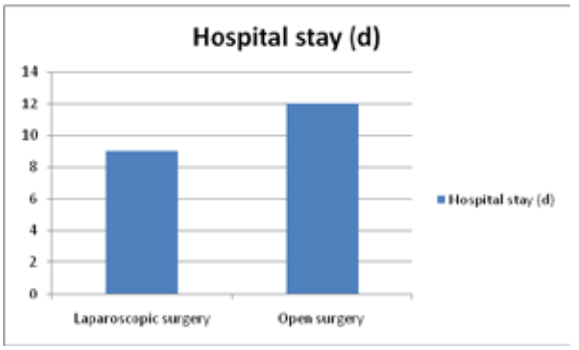
	Laparoscopic Surgery	Open surgery
Operative time (min)	95 min(85-130min)	121 (100–160)



The average operative time in the laparoscopy group was 95 min and that in the open surgery group was 121 min . Thus,the time taken in laparoscopic surgery is significantly less than that in open surgery.

TABLE 9

Outcome of procedure	Laparoscopic surgery	Open surgery
Hospital stay (d)	10(7-13)	13(9-21)
Days of return to work	15.08	19.3



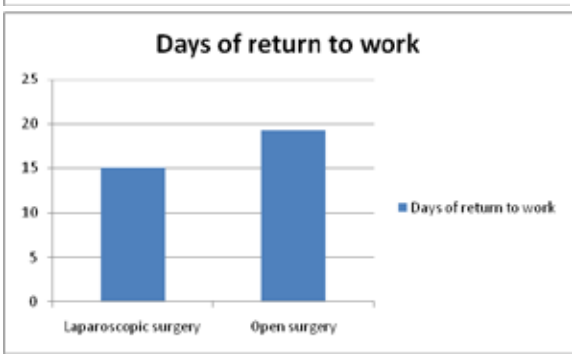


TABLE 10 Out come of procedure

	Laparoscopic surgery	Open surgery
Incisional hernia	Nil	Nil
Operative mortality	Nil	Nil
Recurrence	Nil	Nil

The total duration of hospital stay and days of return to work for each patient in the open surgery group was significantly more as compared to each patient in laparoscopic surgery group due to increased pain, wound infection, injectable antibiotics used , less mobilization due to pain and delayed return of bowel activity. No recurrence was documented on clinical and sonographic examination during follow-up.

Disscussion

The choice of the better management of hydatid cyst of the liver is very difficult because of variable clinicopathological aspects. The treatment should be individualized to the morphology,size,number and location of the cysts.

The introduction of palanivelu hydatid system has revolutionized the use of laparoscopy for liver hydatid cysts because this sealed procedure not only avoids any spillage of fluid but also allows intra-cystic magnified visualization for cyst biliary communications.

In patients fit for laparoscopic surgery and falling in the eligibility criteria for laparoscopic surgery, it is the treatment of choice for the following reasons :

1. Less chances of wound infection and residual sub-phrenic abscess as compared to open surgery
2. Less post-op pain and analgesic requirement as compared to open surgery.
3. Earlier return of bowel activity as compared to open surgery .
4. Decreased duration of hospital stay and earlier return to work as compared to open surgery.
5. Decreased duration of operative time as compared to open surgery.
6. The cosmetic benefit in laparoscopic surgery is obvious.

The only drawback of laparoscopic treatment is increased chances of intra-op hemorrhage as compared to open surgery but chances of this complication also go down with experience of the surgeon in laparoscopic surgery.