

LAPAROSCOPIC PAIR – A NOVEL MINIMALLY INVASIVE APPROACH TO A DEEP SEATED / THICK WALLED HYDATID CYST

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ABSTRACT

Hydatid cyst is a parasitic infection caused by the helminth, tape worm *Echinococcus granulosus* (dog tape worm). The definitive host for this parasite is dog, intermediate host being sheep. Human beings get caught up in the life cycle being the accidental host, accidentally ingesting the infective form of the larva during fondling of the dogs, or coming in contact with sheep as in case of cattle rearers. The human host is the dead end for the life cycle of the helminth with no active multiplication taking place inside. The most common organ affected is the Liver, followed by the lung. Other sites of involvement includes brain, bone, muscle etc. though rare. Of the aforementioned, besides a brain hydatid and a lung hydatid, all others are amenable for the Percutaneous Aspiration Injection Respiration technique (PAIR).

KEYWORDS: *Echinococcus Granulosus*.

INTRODUCTION

Hydatid cyst is a parasitic infection caused by tapeworms – namely *Echinococcus granulosus* and less frequently *Echinococcus multilocularis*. The incidence of the disease is 1-200 per lakh population with the disease being relatively uncommon in Asian countries and being endemic to countries of The Mediterranean and The Americas. Antihelminth therapy using albendazole or similar drugs have failed to bring remission of the disease and hence the procedure of Percutaneous Aspiration Injection Respiration is the gold standard in the treatment of hydatid disease. This can be done ultrasound guided or CT guided. However, for the treatment of active hydatid cysts which are placed more posteriorly within the liver parenchyma, an exploratory laparotomy may be warranted owing to the difficulty in catheterization using a Seldinger needle. In this case study, we here attempt to study the feasibility and the reliability of a novel technique – use of laparoscopic modification of the Percutaneous aspiration injection and respiration procedure.

The patients normally – 50 percent of them are asymptomatic and come with vague upper abdominal discomfort. Other symptoms include pain abdomen, mass per abdomen. The investigation of choice is an

Ultrasonography and in doubtful cases (again rare!) by using a CECT. Class 1 and class 2 according to the Gharbi classification indicate active cyst and requires treatment.

The normally followed treatment protocol is as follows

All the patients need to be given a cover of Albendazole prior to any procedure for a duration of 2 weeks.

After due work up of the patient – especially the LFT, particularly the PT, INR, the patient can be taken up for the PAIR procedure.

The PAIR procedure includes, percutaneous puncture using a seldinger needle, followed by aspiration of the cyst contents. This is followed by the injection of a scolicidal agent like 5 percent phenol in almond oil or 95% absolute alcohol, this is continued for 15 minutes. This is followed by reaspiration. The procedure is continued until the return fluid is clear.

However in cases where the cyst is placed posteriorly within the liver parenchyma, or in case of failure of PAIR procedure owing to the thickness of the cyst an operative management is warranted.

METHODS

In our study we attempt to use a laparoscopic approach for the treatment of Hydatid disease

Patient one

A 45-year-old female presented with complaints of pain in right upper quadrant for the past 15 days, insidious onset, gradually progressive, dull aching, relieved on medications, associated with occasional vomiting and low-grade fever. She had no co-morbidities or history of any surgery in the past. She had tenderness in the right hypochondriac region on examination. All routine blood investigations were within normal limits. Ultrasound (USG) and Computed tomography (CT) of the abdomen revealed a large well-defined cyst of (AP x TR x CC) 9 x 11 x 10 cm in the right lobe of liver with 3 mm wall thickness and multiple thin septae within. This cyst was seen in segment VI of the liver. Two more similar cysts of size 6 x 5 x 4 cm each, were seen in segment V and the left lobe of the liver in segment 3.

Treatment

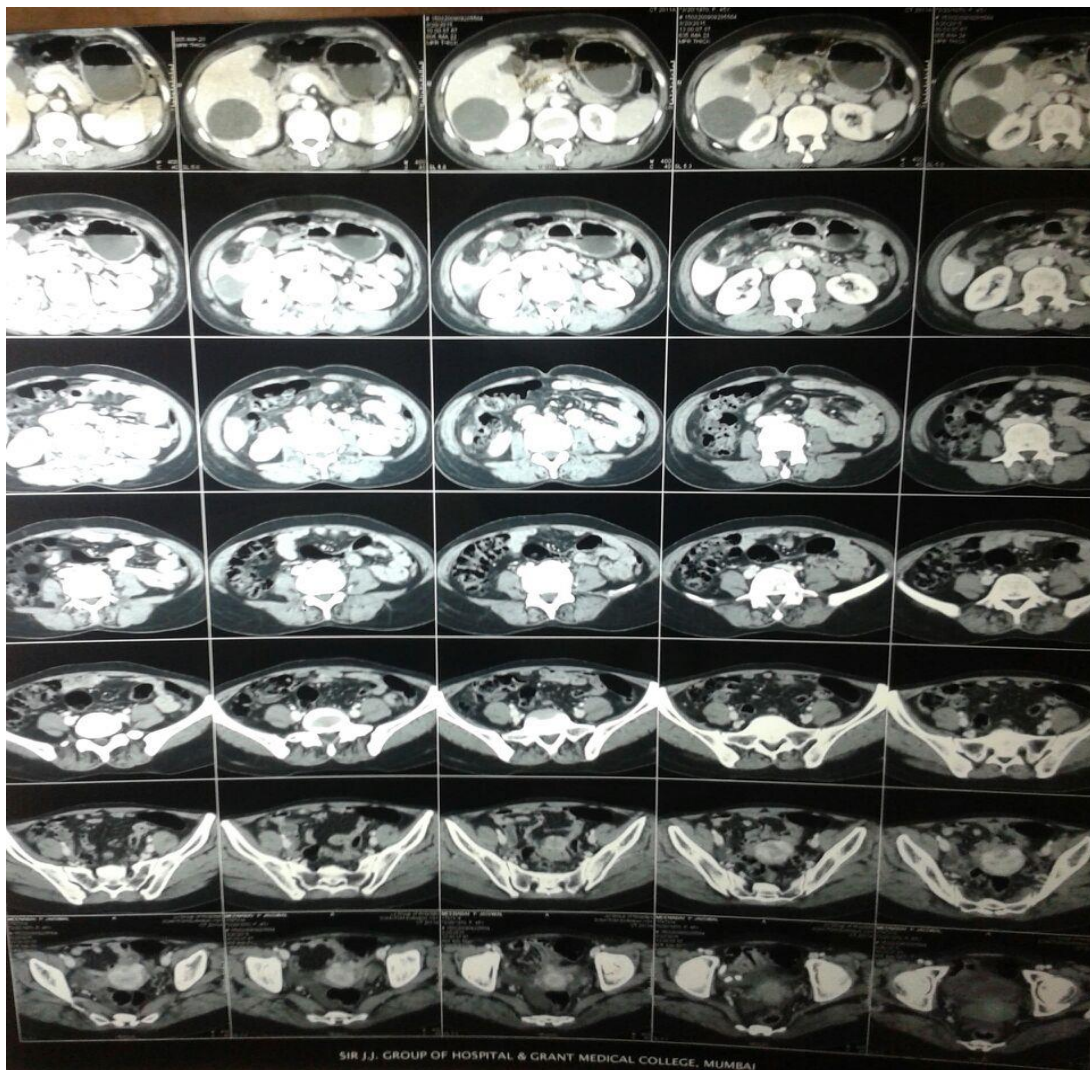
After admission of the patient, she was started on Albendazole cover. Albendazole cover is a must before

the patient undergoes any procedure, and this therapy should be given for a period of 14 days, procedure can be attempted after a cover of 7 days. The smaller cysts present in segment 3 and segment 5 are expected to resolve by itself, under the antihelminth cover with regular follow up. The hydatid placed in segment 6 has a thickness of 3mm and large, showing signs of impending rupture. Ultrasound guided PAIR was attempted but failed owing to the thickness of the cyst.

Instruments required

1. 5 mm laparoscopic port
2. Laparoscopic 5mm suction/aspiration cannula
3. Monitor
4. Ultrasound machine

In our novel technique, we with the help of the radiologist, visualized the cyst under ultrasound guidance. After this a laparoscopic 5 mm trocar and cannula was inserted. Trocar was removed. Aspiration of the cyst contents was done. This was followed by Injection of scolicial agent – and then reaspiration. This was continued until the aspirate was clear.



CECT abdomen showing the location of the hydatid cyst



Aspirate containing daughter cysts.

The above mentioned technique was done after keeping ready inj Adrenaline and defibrillator ready owing to the risk of rupture and anaphylactic shock as is the case with any sort of handling of the cyst – laparoscopic or otherwise.

Patient 2

40 year old male patient came to the OPD with chief complaints of pain abdomen and abdominal lump since the last 3 months. His LFT panels were normal. Ultrasound revealed a deep seated cyst in segment 8 of the liver with thickness of 3mm, which was again not amenable to PAIR procedure.

The patient was yet again started on albendazole cover. With the help of a radiologist and ultrasound guidance the cyst was visualized. A laparoscopic 10mm camera port was inserted and the internal architecture of the cyst studied. Following this injection of the scolicedal agent was done. Reaspiration was done until the return fluid was clear.

DISCUSSION

PAIR procedure is the accepted treatment for Hydatid cyst. All procedures need to be carried out with antihelminthic cover. However, in case of cysts which are deep seated / thick walled but yet still active, a cystopericystectomy needs to be done. Cystopericystectomy can be done by either an open approach or by a laparoscopic approach. Laparoscopic approach however has its limitations – for example in case of a deep seated cyst placed in the posterior aspect

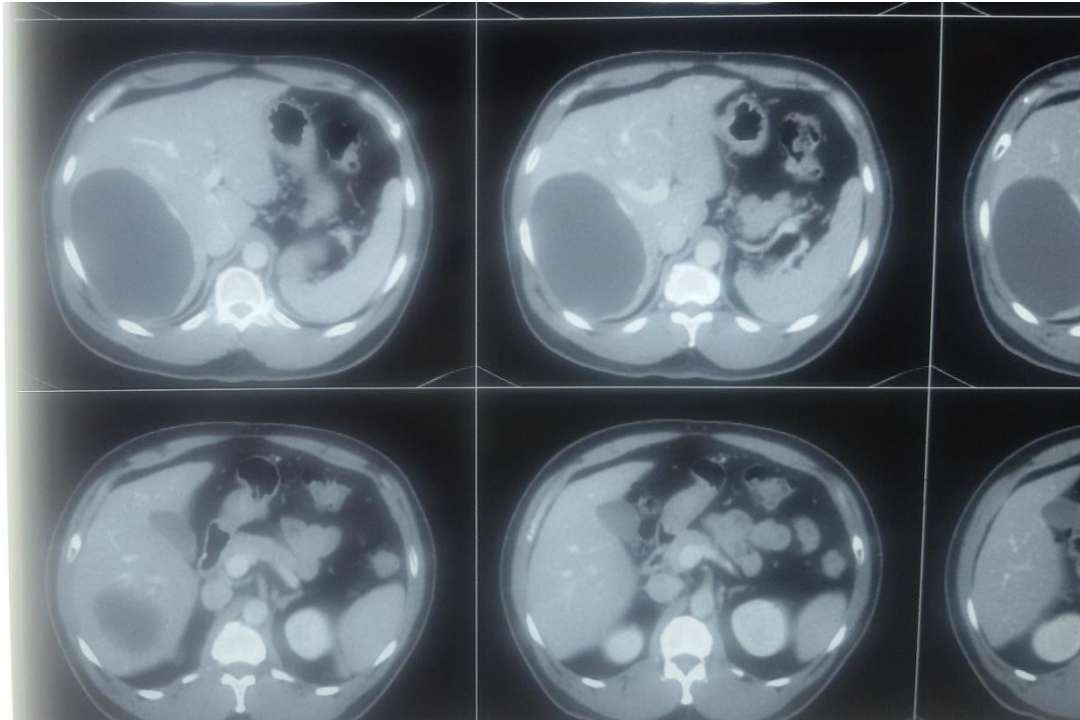
of the liver. These cysts need to be approached using the open technique. Open technique is associated with high peri-operative morbidity with possible Injury to vital structures intra operatively and a longer recovery period post operatively. Also, the patient has to go home with a huge scar of a right subcostal Kocher's incision as well.

Equipment Required

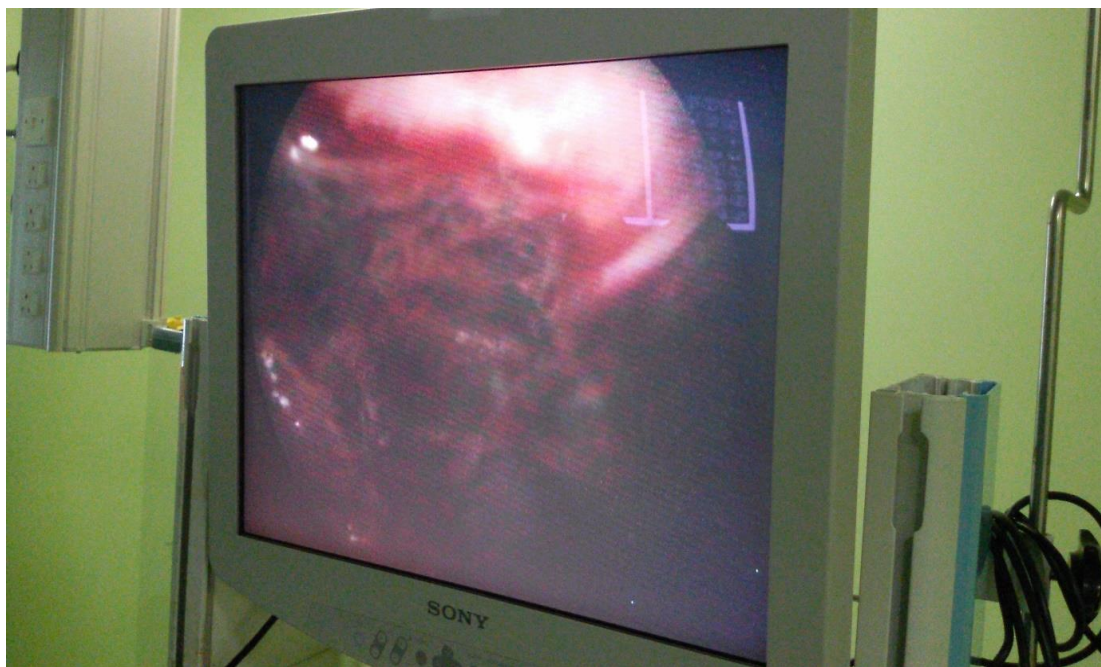
1. Laparoscopic port – 5 mm or 10 mm
2. USG probe
3. 5mm/10mm suction aspirator
4. Camera and screen (optional)

In this novel method – patient position can be decided based on the position of the cyst. posteriorly placed cyst can be reached with more ease if the patient is placed in prone / lateral decubitus position. Patient is given intravenous sedation – TIVA with laryngeal mask airway and Local infiltration of bupivacaine is also given.

Using an ultrasound probe – position of the cyst is confirmed. After this, the laparoscopic port 5mm preferred over 10mm inserted, aspiration of the contents of the cyst are done for 15 mins atleast. This is followed by injection of scolicedal agent. The scolicedal agent which is used can be 5% phenol in almond oil, 95% absolute alcohol. Reaspiration of the cyst contents are done after flushing. The procedure is repeated, until the return fluid is clear. Any sort of manipulation of the cyst should be done keeping ready in hand Inj adrenaline loaded, in the unlikely yet potentially fatally event of anaphylactic shock.



CECT abdomen showing hydatid cyst in segment VIII of the liver



Laparoscopic view of the internal architecture of the cyst



OPERATIVE POSITIONING OF THE PATIENT

Postoperatively patient can be started on Full diet as soon as within 4 hours of the procedure. Post operatively, the size of the cyst can be compared with the pre operative dimensions using ultrasound under trained hands, which is the investigation of choice or a CECT. The patient requires follow up after 3 months to check for the regression of the cyst.

By using this minimally invasive technique, we can decrease the post operative stay and recovery time and also the morbidity which comes with a major surgery which involves manipulation of the liver parenchyma and possibly the biliary radicals as well.

CONCLUSION

In this case study we attempt a novel minimally invasive technique for the treatment of a thick walled/ deep seated hydatid cyst using a laparoscopic approach to the PAIR technique, which would have otherwise required an exploratory laparotomy or a right subcostal Kocher's incision at the least. By using this minimally invasive technique we can save the patient from a long post operative recovery as well as the risk factors associated with an open procedure. This improves the quality of life of the patients as well as decreases the financial burden as well. Post operative monitoring of these patients require only a repeat ultrasonography (under trained hands) and a serum LFT panel. By advocating this technique we hope to bring down overall peri-operative morbidity.