

## Case Report: Modified Diagnostic Peritoneal Lavage (DPL) In Treatment of Perforated Gastrointestinal Tuberculosis

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**Abstract:** In recent years, there is increasing incidence of tuberculosis in Malaysia population and worldwide. Along with this, abdominal tuberculosis has become more frequently encountered in our health care setting. Perforated gastrointestinal tuberculosis posts a very high surgical mortality risk and therefore, its management remains controversial. Here, we presented a case of abdominal tuberculosis complicated with gastrointestinal perforation which was successfully treated with modified diagnostic peritoneal lavage and concomitant anti-tuberculous therapy. No laparotomy surgery was required.

**Keywords:** Diagnostic Peritoneal Lavage, DPL, Gastrointestinal Tuberculosis, Bowel Perforation, TB Gut, Gastrointestinal Obstruction.

**INTRODUCTION**

Pulmonary tuberculosis has been endemic among Asia countries. In recent years, there is increasing incidence in Malaysia population and worldwide. World Health Organization has reported a total incidence of 25,000 cases tuberculosis in Malaysia in 2016. It is associated with increasing cases of AIDS, immigrants, social conditions and poverty. Along with this, abdominal tuberculosis has become more frequently encountered in our health care setting.

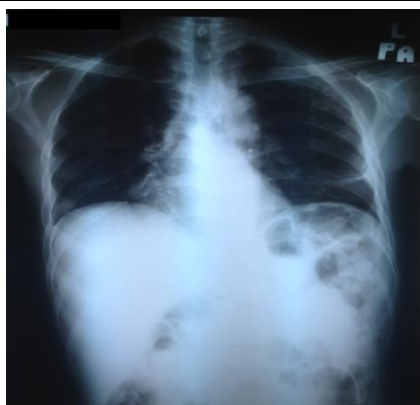
Absolute indications of surgical intervention in abdominal tuberculosis include non-resolving intestinal obstruction, perforation and abscess or fistula formation [1]. However, tuberculous patients are poor candidates for surgery due to their poor nutritional and immunocompromised status. It is usually associated with high surgical mortality and morbidity. Therefore, management of abdominal tuberculosis remains controversial.

Here, we presented a case of abdominal tuberculosis complicated with gastrointestinal perforation which was successfully treated with modified diagnostic peritoneal lavage and concomitant anti-tuberculous therapy. No laparotomy surgery was required.

**CASE REPORT**

This is a 28 year old malay gentleman who presented to our hospital on September 2017 with

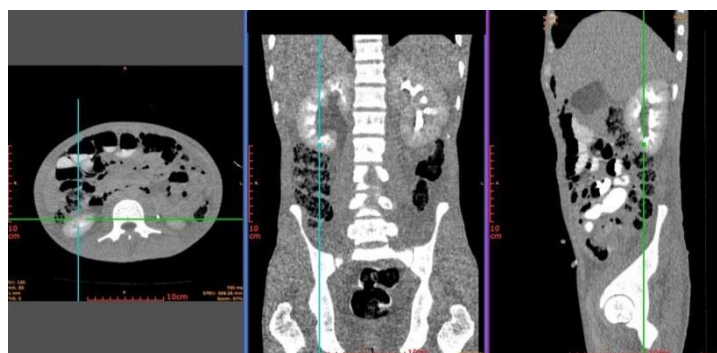
complaint of sudden onset severe abdominal pain since 4 days ago. The abdominal pain was generalized and colicky in nature, associated with abdominal distension, vomiting and fever. He denied any history of altered bowel habit, chest pain, shortness of breath. He had a history of loss of weight about 3 kg since 4 months ago. He was newly diagnosed with smear positive pulmonary Tuberculosis since early August 2017, just started with anti-tuberculosis treatment. However patient did not comply with anti-tuberculosis treatment. Otherwise he was a non-smoker and had no past surgical history. On presentation, he was alert but in pain; hemodynamic stable with tachycardia 110bpm. Abdominal examination revealed a rigid distended abdomen over the periumbilical and suprapubic region, which was tender on palpation. Bowel sound was absent. Chest x-ray in erect position did not reveal air under diaphragm and abdominal x-ray showed dilated small bowels (Figure 1).



**Fig-1: Chest x-ray during admission**

In view of hemodynamic stability, we proceeded with CECT abdomen, which revealed a complex interloop fluid with pneumoperitoneum suspicious of perforated viscus, large bowel wall

thickening with intra-abdominal lymphadenopathies, multifocal tuberculosis abscess of liver, right mild hydronephrosis and hydroureter likely due to surrounding inflammation (Figure 2).

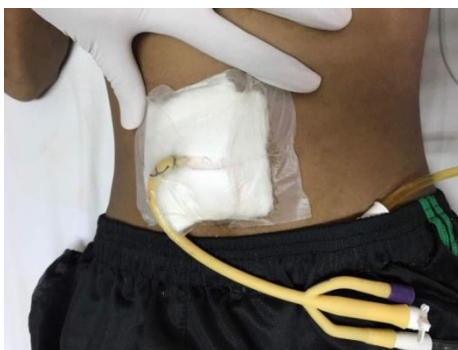


**Fig-2: CECT Abdomen during admission- axial, coronal and sagittal view**

The patient was subsequently admitted for perforated intestinal tuberculosis with peritonitis. Baseline blood investigations include full blood count; renal profile, liver function and coagulation profile were taken. Full blood count showed leucocytosis  $21 \times 10^3/uL$  with thrombocytosis of  $470 \times 10^3/uL$ . Renal profile was within normal range. Liver function revealed hypoalbuminemia 26 g/L, with normal bilirubin and liver enzyme level. Coagulation profile was normal. Serum erythrocyte sedimentation rate (ESR) showed moderately rise with level of 74 mm/hr.

Considering the malnourished and immunocompromised state of the patient, laparotomy surgery would carry a high mortality risk. We thus decided to proceed with modified diagnostic peritoneal

lavage with concurrent anti-tuberculosis treatment on first day of admission. Modified diagnostic peritoneal lavage was done under local anesthesia with aseptic technique. A linear 2cm incision was made at 3 cm below umbilicus. A 16Fr 3 way Foley catheter was inserted into peritoneal cavity. (Figure 3) 20cc straw colour peritoneal fluid was withdrawn and sent for AFB and C&S. The peritoneal lavage was kept free flow with normal saline 0.9%. Patient was kept nil by mouth with Ryle's tube inserted and kept free flow during the first day. Total parenteral nutrition was given for optimization of nutrition support. Intravenous antibiotics include cefoperazone and metronidazole regular doses were given for treatment of intraabdominal sepsis.



**Fig-3: Modified Diagnostic Peritoneal Lavage- 16Fr 3 ways catheter was inserted to peritoneal cavity, and normal saline 0.9% was run free flow for peritoneal lavage**

Throughout the period of peritoneal lavage, patient complaint of abdominal discomfort which required intravenous analgesia. Hemodynamic was stable and peritoneal lavage fluid remained clear. Reassessment was done after 24 hours of lavage. Abdominal examination revealed a resolved rigidity of abdomen with slight distension. Bowel sound improved. Peritoneal fluid AFB and C&S were negative findings.

The peritoneal lavage was kept for 48 hours. The catheter and Ryle's tube were removed subsequently after completed 48hours of peritoneal lavage. (Figure 4) The patient was advised for oral feeding with soft diet. He tolerated orally well and abdominal examination revealed soft abdomen with no obvious palpable mass. Blood parameters were normalized post peritoneal lavage.



**Fig-4: Removal of peritoneal lavage catheter after 48hours of peritoneal lavage**

CECT abdomen was repeated 24hours after removal of modified diagnostic peritoneal lavage catheter, which showed improvement of pneumoperitoneum with resolved right mild

hydronephrosis and hydroureter; unchanged complex interloop fluid with large bowel wall thickening and intra-abdominal lymphadenopathy and liver lesions (Figure 5).



Fig-5: Figure 2: CECT Abdomen post 48 hours peritoneal lavage - axial, coronal and sagittal view

Patient was discharged home well after 1 week admission with compliance advice for anti-tuberculosis treatment.

### DISCUSSION

Abdominal tuberculosis that requires surgical intervention includes intestinal obstruction and perforation. It is often presented in acute state. Patients with tuberculosis are often associated with malnourished and immunocompromised state. Reactive fibrosis of the peritoneum and extensive adhesion formation in abdominal tuberculosis further complicates the surgery. Thus, surgical intervention for abdominal tuberculosis is often associated with high mortality and morbidity rate. In current trend, surgical management of abdominal tuberculosis has moved towards conservative management [1]. Early treatment with anti-tuberculous therapy is suggested as it is often responsive [2].

As compared to previous case reported, in current case, we would like to emphasize the benefit of modified diagnostic peritoneal lavage over laparotomy in perforated gastrointestinal tuberculosis [3]. The role of modified peritoneal lavage is to reduce the contamination load due to perforated viscus with intra-abdominal sepsis. Reduction of intra-peritoneal infection therefore controls the subsequent inflammatory process and septicemia [5]. Simultaneously, the patient was started with anti-tuberculous therapy and intravenous antibiotics for intra-abdominal sepsis, which were the mainstay management of his acute septic phase.

It is also important to highlight the nutritional support for patients with perforated gastrointestinal tuberculosis. As the patient was kept nil by mouth to prevent worsen peritonitis, total parenteral nutrition should be given since early phase of disease. With the underlying malnourished state, current sepsis would further impede his nutrition state, which resulted in poor healing and recovery.

### CONCLUSION

Modified diagnostic peritoneal lavage has played a beneficial role in management of perforated gastrointestinal tuberculosis with peritonitis. Early anti-tuberculous therapy, antibiotics and nutrition support are important concomitant management.

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