

DIAGNOSIS OF ABDOMINAL TUBERCULOSIS IN CHRONIC ABDOMINAL PAIN: LAPAROSCOPY AS AN EFFECTIVE DIAGNOSTIC TOOL

Rajiv Jain, Ravi Dosi

1. Assistant Professor. Department of General Surgery, SAIMS & Post Graduate Institute, Indore.
2. Assistant Professor. Department of Respiratory Medicine, SAIMS & Post Graduate Institute, Indore.

CORRESPONDING AUTHOR:

Dr. Rajiv Jain,
Flat no 101, Gauthamshri Apartment,
626, Sneh Nagar, Indore-452001.
E-mail: ravi.dosi@gmail.com

ABSTRACT: Chronic abdominal pain is a FREQUENTLY ENCOUNTERED problem and abdominal tuberculosis is a very common cause of the same. Diagnostic laparoscopy is a highly sensitive, specific, and safe procedure for the early diagnosis of abdominal tuberculosis. The procedure is beneficial because it is minimally invasive and provides diagnostic benefit in terms of both visual appearances and tissue yield for histopathological and cytological confirmation. We have performed an extensive retrospective study with 250 subjects and were able to justify the safety, sensitivity & early selection of laparoscopy as a procedure of choice to confirm tuberculosis in chronic abdominal pain.

INTRODUCTION: Chronic abdominal pain is a very frequent problem putting a heavy burden on the limited health resources in a developing country like India. Often the clinical presentation is vague and nonspecific and the available diagnostic modalities fail to pinpoint the underlying pathology.

Histopathological confirmation of abdominal Tuberculosis is difficult due to suboptimal noninvasive access to the pathology.

Tuberculosis (TB) remains a major global health problem. It causes ill-health among millions of people each year and ranks as the second leading cause of death from an infectious disease worldwide, after the human immunodeficiency virus (HIV). The latest estimates report that there were almost 9 million new cases in 2011 and 1.4 million TB deaths (990 000 among HIV negative people and 430 000 HIV-associated TB deaths).¹

AIMS AND OBJECTIVES: To evaluate the role of laparoscopy as a confirmatory diagnostic tool in diagnosing abdominal Tuberculosis as a leading cause of chronic abdominal pain.

MATERIAL AND METHODS: We performed a retrospective evaluation of patients presented for evaluation of chronic abdominal pain over the last three years in SAIMS medical college and hospital, Indore.

The duration of the study was 3 years and the total study subjects were 250.

Patients presenting with vague abdominal pain and other gastrointestinal complaints of three months or more duration with no conclusive diagnosis despite many investigations were included.

Follow up study of these patients were performed on basis of available contact details and data stored in the medical record department & out patient department.

ORIGINAL ARTICLE

The patients with chronic abdominal pain were offered diagnostic laparoscopy as the preferred diagnostic modality.

LAPAROSCOPIC TECHNIQUE: Laparoscopy was done under general endotracheal anesthesia in all patients.

A nasogastric tube and Foley catheter were inserted as appropriate; both were removed at the end of surgery.

The first 10 mm camera port was introduced by open Hassan technique in the sub umbilical region. Depending on the suspected pathology and the presence of accessible sites for the biopsy, one or two working port was introduced under direct vision in midclavicular line on either side.

Initial exploratory laparoscopy was performed to examine the pelvic cavity, the paracolic spaces, bowel, mesentery, omentum, liver and peritoneal surfaces. Ascitic fluid was aspirated for zeihl nelson staining, culture and cytology. Biopsies were taken from greater omentum and from different peritoneal sites and lymph node biopsies were taken from accessible lymph nodes.

In all patients the specimens were removed either with the help of a 10-mm cup forceps or after placing them in an impervious plastic bag. The fascia at the site of all 10-mm ports was closed under vision. [2]

RESULTS: Two hundred fifty patients were reviewed which had been treated over a period of previous three years.

Clinical features

Abdominal pain	100%
Weight loss	67%
Loss of appetite	72%
Gastrointestinal symptoms [nausea, vomiting, diarrhea]	62%
Fever, night sweats	48%

Treatment

DIAGNOSTIC modality	Total
Diagnostic laparoscopy	212
Conservative	38

RESULTS : Laparoscopy was performed in 212 patients and abdominal tuberculosis was diagnosed in 123 (58%) of them, characterized by presence of macroscopic findings of straw colored fluid, Stalactic bands, Multiple white tubercles /nodules, Omental thickening, Hyperemic edematous bowel ,Dense inter bowel loop adhesions, Mesenteric lymphadenopathy. 148 (70%) were female and 64 (30%) were male patients.

Age range between 15 and 58 years with a mean age of 30 years. The mean duration of symptom was 16 weeks (range between 12 weeks to 20 weeks)

The main symptoms were abdominal pain (100%), weight loss (67%), gastrointestinal symptoms (62%) and nocturnal fever and sweating (48%)

Mantoux test was positive in 96% of patient diagnosed as abdominal tuberculosis. There was no morbidity or mortality related to laparoscopic intervention.

ORIGINAL ARTICLE

Out of all the laparoscopies conducted in 212 patients, 9 were converted into formal laparotomies because of intraoperative problems like difficult access, dense adhesions, and poor visualization. so the identification of anatomical details of intraabdominal structures was not possible. These 9 cases were converted to laparotomies for diagnostic purposes only. and in these 9 conversion, after opening the abdomen by laparotomy, the intraabdominal contents were explored, the visual findings were noted and the biopsies were taken from representative tissues and the biopsy specimens were sent for histopathology.

Histopathological report of biopsy established the diagnosis of abdominal tuberculosis in 123 patients (58%). All patients were started on antitubercular therapy and they showed good

Clinical response-

Diagnosis	Percentage
Tuberculosis	58%
Malignancy	11%
Post operative adhesions	8%
Pelvic inflammatory disease	7%
Recurrent appendicitis	6%
Ovarian cyst, fimbrial cyst	3%
Cirrhosis liver	2%
Others	5%

The prominent laparoscopic findings noted were the following,

MALIGNANCY
Intestinal mass lesions
Omental mass
Diffuse carcinomatosis
Malignant ascites
abdominal lymphadenopathy

PELVIC INFLAMMATORY DISEASE
Fluid in pouch of Douglas
Adnexal pathology

Abdominal tuberculosis	
Stalactic bands	
Multiple white tubercles /nodules	DSC00022.JPG
Omental thickening	DSC00017.JPG
Hyperemic edematous bowel	
Dense inter bowel loop adhesions	
Mesenteric lymphadenopathy	
Straw colored ascites	

High correlation with Bhargava et al [3]

Post operative adhesions

ORIGINAL ARTICLE

Previous Laparotomy
Previous Appendicectomy
Previous Hysterectomy

DISCUSSION: Chronic abdominal pain can be a diagnostic challenge because of varied presentation and limitations of available diagnostic modalities.

Abdominal tuberculosis constitutes a significant proportion of the differential diagnosis of patients with nonspecific abdominal complaints and weight loss over a prolonged period.

Tuberculosis is a reemerging global emergency and the incidence of extra pulmonary Tuberculosis especially abdominal TB has increased dramatically with the population explosion. This has been attributed to the emergence of multi drug resistant strains of *mycobacterium tuberculosis*, infection with HIV or AIDS, along with factors like poverty, overcrowding, insufficient public health facilities, incomplete antitubercular treatment, lack of sanitation etc.

Tuberculosis can involve any part of gastrointestinal tract from mouth to anus, the peritoneum, and pancreatobiliary system. The most common site involved is ileocaecal region. Peritoneal TB is the most common form of abdominal TB and can involve the peritoneal cavity, mesentery, and omentum. Peritoneal TB can be of three types. A wet type with ascites or pockets of loculated fluid; a dry type with bulky mesenteric thickening and lymphadenopathy; and a third type with mass formation due to Omental thickening.

Usually the abdominal tuberculosis results from the reactivation of latent tubercular foci. These foci follow hematogenous dissemination from the primary disease in the lung and remain patent. Tuberculous peritonitis is the result of silent foci reactivation.

In this retrospective study we have made an attempt to analyze the diagnostic issues in the abdominal tuberculosis in a tertiary care centre of a developing country where many recent diagnostic modalities are available.

Our findings confirm the earlier reports on difficulties of diagnosis including nonspecific clinical features, unhelpful laboratory tests, and negative results with ziehl nelson staining and false negative barium, ultrasound and CT scan. We found Laparoscopy as the most accurate diagnostic modality for abdominal tuberculosis with its advantage of histological confirmation and minimally invasive technique.

Therapeutic trial with antitubercular chemotherapy though recommended by some is not totally justified. Starting empirical antitubercular therapy in a suspected abdominal tuberculosis patient is a practice fraught with the danger of missing out or delay in the diagnosis of a more sinister pathology. Histopathological examination is an appropriate method both for diagnosing abdominal tuberculosis and for ruling out other pathology like malignancy. It is quite difficult because of suboptimal noninvasive access to intra abdominal pathology. Though many different methods like peritoneal biopsy with small McBurney incision, blind percutaneous needle biopsy Laparotomy biopsy have been tried, but each have its own hazards and disadvantages.

The value of laparoscopy as the most specific diagnostic tool for abdominal tuberculosis is undoubtedly proven due to the advantage of histological confirmation. Unfortunately, this useful investigation is not yet fully accepted and still used as a last resort.

Although barium, USG and CT scan are useful in identifying abdominal tuberculosis, imaging findings may not always be disease specific.

In abdominal tuberculosis, histopathological examination is the best way to confirm Tuberculosis and rule out other diseases like malignancy.

ORIGINAL ARTICLE

Earlier Laparotomy was the only definitive diagnostic approach. Though it yields correct diagnosis but at the cost of significant morbidity. Laparoscopy provides minimally invasive access to the peritoneum, thus reducing morbidity without compromising the diagnostic yield. During laparoscopy, abdominal tuberculosis is suggested by macroscopic signs like tubercles/nodules over the peritoneal surfaces, thickening and hyperemia of omentum, inflammatory adhesions and a long fibrous band extending from the parietal to visceral peritoneum called 'Stalactic band' which is quite characteristic of abdominal tuberculosis.[8] Analysis of macroscopic findings during laparoscopy in 123 histopathological confirmed cases of abdominal tuberculosis.

In our study, small white tubercles over peritoneal surfaces were found in 106 patients (86%)

Omental thickening was found in 101 patients (82%).

Stalactic band which is the best macroscopic confirmatory feature was found in 110 cases [89%].

There were no complications or mortality in any of the laparoscopic surgery.

In 9 cases intraoperative decision for conversion of Laparotomy was taken due to difficult access, dense adhesions, inadequate exposure and poor identification of anatomical details.

The biopsy tissues obtained during laparoscopy were sent for histopathological examination.

In all the patients in whom histopathological confirmation of abdominal tuberculosis was obtained, antitubercular treatment was started promptly and the patients improved symptomatically very soon.

Several authors confirm the role of laparoscopy in diagnosing abdominal tuberculosis,

Author	Study Subjects	Sensitivity
Bhargava et al [3]	87	95%
Rai & Thomas et al [4]	36	100%
Ibrahullah et al [5]	23	87%
Razi hospital, Iran [6]	29	98%
Our Study,SAIMS	212	58%

The beneficial aspects of diagnostic laparoscopy were

Author	Benefits
Bhargava et al [3]	Visual appearance super cede histology & culture for diagnosing tuberculosis
Rai & Thomas et al [4]	Early laparoscopy is beneficial for earlier diagnosis
Ibrahullah et al [5]	Laparoscopy is a safe and mortality free procedure
Razi hospital, Iran [6]	High sensitivity
Rajiv Jain et al, SAIMS	Early laparoscopy is the investigation of choice for abdominal Tuberculosis

Thus laparoscopy with tissue biopsy is the most sensitive and specific diagnostic procedure for abdominal tuberculosis and can be termed as the investigation of choice.

CONCLUSION: Abdominal tuberculosis constitutes a major proportion of patients suffering from chronic abdominal pain. It may be fatal but is medically cured if diagnosed timely. Establishing a histological diagnosis in abdominal tuberculosis is a quite challenging, frequently delaying treatment. The usual laboratory investigations, barium studies, ultrasound are often non diagnostic. Therapeutic trial with anti tubercular treatment is not justified without histological confirmation.

Laparoscopy has turned out to be the most specific diagnostic modality for abdominal TB with the advantage of histological confirmation.

Early laparoscopy is safe and useful in diagnosis of abdominal tuberculosis in a case of chronic abdominal pain because it is minimally invasive and avoids many costly, time consuming and sometimes unyielding investigations and permits early commencement of proper treatment.

Unfortunately it is still used as a last resort when all the other investigations fail to provide accurate diagnosis.

The present study strengthen the evidence that early laparoscopy is the investigation of choice in a suspected patient of abdominal tuberculosis with a relevant clinical history and background.

Diagnostic laparoscopy should be considered in the work up of all patients with chronic abdominal pain and suspected abdominal TB because this minimally invasive technique can prevent many serious morbidities and mortalities.

REFERENCES:

1. WHO global report 2012
2. J Minim Access Surg. 2007 Jan-Mar; 3(1): 14–18.
3. Bhargava DK, Shriniwas, Chopra P, Nijhawan S, Dasarathy S, Kushwaha AK. Peritoneal tuberculosis: laparoscopic patterns and its diagnostic accuracy. Am J Gastroenterology 1992; 87: 109-12.
4. Thomas WM. Diagnosis of abdominal tuberculosis: the importance of laparoscopy. J R Soc Med 2003; 96:586 –8
5. Ibrarullah M, Mohan A, Sarkari A, Srinivas M, Mishra A, Sundar TS. Abdominal tuberculosis: diagnosis by laparoscopy and colonoscopy. Trop Gastroenterol. 2002 Jul-Sep; 23(3):150-3
6. Safarpor Faizollah, Aghajanzade Menochehr, Kohsari Mohammad Reza R, Hoda Saba, Sarshad Ali, Safarpor Delaram, Role of laparoscopy in the diagnosis of abdominal tuberculosis, Saudi cij Year : 2007,13 ,3 ,133-135
7. A. A. Al-Mulhim. Laparoscopic diagnosis of peritoneal tuberculosis, Surg Endosc (2004) 18: 1757–1761
8. Târcoveanu E et al Abdominal tuberculosis--a surgical reality .Chirurgia (Bucur). 2007 May-Jun;102(3):303-8. Romanian



Laparoscopic technique showing port position



intra operative photograph in diagnostic laparoscopy showing thickened Omentum



intra operative photograph in diagnostic laparoscopy showing ascitic fluid.