

# Does Laparoscopy Have a role in Chronic Abdominal Pain?

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## ABSTRACT

**Introduction:** Chronic abdominal pain is intermittent or continuous pain lasting for more than twelve weeks. It is a significant clinical problem that is often a diagnostic challenge since a large number of patients presenting with chronic abdominal pain have no specific diagnosis at the end of their diagnostic workup. Diagnostic laparoscopy, which is a minimally invasive procedure could potentially be diagnostic and also therapeutic for chronic undiagnosed abdominal pain. Present study aimed to analyze the diagnostic and therapeutic value of laparoscopy in chronic, undiagnosed abdominal pain.

**Materials and methods:** Thirty patients with chronic abdominal pain who had undergone diagnostic laparoscopy were included in this study. The pain in all patients was of undetermined aetiology in spite of all the investigations done. The findings, interventions performed and outcomes of the laparoscopy were recorded and analyzed.

**Results:** Final diagnosis after reports of histopathological examination and pelvic fluid analysis, was established in 86.6% of the patients and was inconclusive in 13.3% of the patients.

The most common finding was abdominal tuberculosis which was found in 13 (43.3%) patients; followed by adhesions found in 5 (16.6%) patients. Recurrent appendicitis was found in 5 (16.6%) patients, which was confirmed by histopathological examination. Pelvic Inflammatory Disease was found in 2 patients. No specific cause of chronic abdominal pain could be found in 4 (13.3%) patients. 26 (86.6%) patients found significant subjective relief of pain post operatively while four patients reported no decrease in pain.

**Conclusion:** In selected patients, Laparoscopy is an effective diagnostic and therapeutic modality in the management of patients with chronic abdominal pain.

**Keywords:** Chronic abdominal pain; Diagnostic Laparoscopy; Minimally Invasive, Abdominal Tuberculosis, laparoscopic adhesiolysis.

## INTRODUCTION

Up until not very long ago, the abdomen was called the “Pandora’s Box” by surgeons; it was capable, on being opened, of throwing the biggest surprises at even the most seasoned clinicians.<sup>1,2</sup> Any laparotomy, performed for even a planned procedure used to be a tad defensively labeled an ‘Exploratory Laparotomy’. The operating surgeon would then have to deal with any problem that revealed itself. This, of course compromised on preoperative planning for procedures.<sup>3,4</sup> However, in the last few decades there have been tremendous advances in imaging techniques, including ultrasound, CT scan, MRI; and endoscopy. The need for an “exploratory” laparotomy is no longer felt as much, since the pathology can, in most cases be fully visualized in advance.

Yet there are situations in which all the investigative modalities fail to come up with a diagnosis and the evaluation of chronic abdominal pain is one such area. Every surgeon is familiar with

the persistent patient who keeps coming back for weeks, with a complaint of abdominal pain and all investigations carried out fail to come up with a diagnosis that will direct definitive treatment. We must then rely on visualization of the abdominal cavity with the eye, and haptic sensation, to come up with a diagnosis.

A diagnostic laparoscopy could be a minimally invasive option to thus explore the abdominal cavity. The present-day laparoscope allows unhindered visualization of every aspect of the abdominal cavity. It allows for performing every possible procedure, limited only by the skill, training and coordination of the laparoscopy surgical team.<sup>5-7</sup>

In the present study, we aim to determine the diagnostic and therapeutic value of laparoscopy in chronic, undiagnosed abdominal pain.

## MATERIAL AND METHODS

Thirty patients with chronic abdominal pain, who were scheduled for diagnostic laparoscopy were included in the study, carried out at BYL Nair Charitable hospital and the associated TN Medical College, a major tertiary care teaching Institution in Mumbai. Patients were consecutively included, based on inclusion and exclusion criteria. The study was carried out between January 2014 and December 2014.

All Patients included in the study had a history of chronic abdominal pain for longer than 3 months and in them, physical examination and conventional diagnostic tests were inconclusive. By conventional diagnostic tests is meant, blood tests – specifically a leukocyte count, ESR and Montaux test; Radiological investigations including Ultrasound, CT scan or MRI as applicable and Endoscopic tests including Upper and lower GI endoscopy, as applicable.

### Exclusion criteria

Patients with diagnosed oncological conditions, pregnant women and those that were upto 1 year post-partum were excluded from the study. Patients with critical illness; patients with coagulation defects, patients who were medically unfit for surgery were also excluded.

Patients with acute abdominal conditions, history of blunt or penetrating abdominal trauma and patients under psychiatric evaluation were excluded.

Written informed consent for enrolment in the study was taken. Approval from the local hospital ethics committee was obtained. The history, clinical features, biochemical, radiological,

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endoscopic investigations and provisional diagnosis were noted. All procedures maintained standard of care and strict confidentiality was maintained.

The procedure of diagnostic laparoscopy was explained and informed written consent of the patients was taken.

All necessary pre-operative investigations were carried out and patients evaluated for fitness for anesthesia. Patients were kept nil by Mouth for 12 hours prior to surgery.

The diagnostic laparoscopy was performed under general anaesthesia. Initial port placement was umbilical, by the open technique. In cases with scars and previous history of surgery, initial port placement was done at Palmer's point, by open technique. Additional ports were inserted as required. The abdominal cavity was examined to the extent possible in each case. Interventions such as adhesiolysis, appendectomy, peritoneal biopsy, lymph node biopsy or aspiration of any peritoneal fluid were carried out at the discretion of the operating surgeon.

The final diagnosis was established after the reports of biopsy, fluid analysis for cytology and microscopy and histopathology examination.

Following the procedure, patients received appropriate treatment, based on the findings of the laparoscopy. Patients were examined in the post-operative period and following discharge, were followed up for a period of three months and symptoms were noted. Any complications relating to the diagnostic laparoscopy were also noted.

## STATISTICAL ANALYSIS

The data was tabulated and the necessary values were calculated using Microsoft Excel (2007) software. Descriptive statistics like mean and percentages were used to interpret the results.

## RESULTS

A total of 30 patients were studied. 26.6% of the patients were in the age group of 26 to 35 years, with a mean age of 34 years. 17 patients i.e. 56.6% were female and 13 patients i.e. 43.3% were male.

16 patients (53.3%) presented with generalized abdominal pain, 10 patients (30%) with pain in lower abdomen or right iliac fossa and 4 patients (13.3%) with pain in upper abdomen.

Of the 16 patients with generalized abdominal pain, after laparoscopic examination abdominal tuberculosis was present in 8 patients, adhesions were found in 3 patients, Meckel's diverticulum in 1 patient and recurrent appendicitis in 2 patients. No diagnosis could be established in 2 patients.

Pain in lower abdomen was present in 10 patients and of these, 6 patients had pain in the right iliac fossa. In these 10 patients, recurrent appendicitis was present in 3 patients, pelvic inflammatory disease in 2 patients, adhesions in 1 patient (in operated case of ovarian cystectomy) and 4 patients had abdominal tuberculosis. A diagnosis of pelvic inflammatory disease was made based on the presence of a tubo-ovarian mass, hydrosalpinx or a congested, inflamed appearance of the tubes and uterus. In the 6 patients who presented with pain in right iliac fossa, recurrent appendicitis was present in 3 patients, and 3 patients had abdominal tuberculosis.

ESR was high in 6 patients (20%) of which 4 patients had abdominal tuberculosis, 1 patient had adhesions and 1 patient

had recurrent appendicitis.

Tuberculin test was strongly positive, with an induration of more than 15 mm in 1 patient and he was diagnosed to have abdominal tuberculosis on histopathology. 8 patients had a positive tuberculin test with an induration of more than 10 mm but less than 15 mm, four of whom were diagnosed to have abdominal tuberculosis.

9 patients had history of previous surgery of which 5 patients had undergone appendectomy, 2 patients had a history of paraumbilical hernia repair, 1 patient had undergone ovarian cystectomy, 1 patient had undergone laparotomy for duodenal perforation. Of these, in 5 patients, adhesions were found at laparoscopy. Table-1 summarizes the findings in all patients at laparoscopy.

Out of all 30 patients, on laparoscopic examination, Abdominal tuberculosis was diagnosed in 13 patients, with 7 patients having peritoneal tubercles and 6 patients having enlarged mesenteric lymph nodes.

All 5 patients with Adhesions had history of previous surgery. Of the 5 patients diagnosed with Recurrent Appendicitis, 4 patients had fecolith and 1 patient had a long kinked appendix. In 4 patients, there were no positive findings on laparoscopy.

At laparoscopy, biopsy was taken in 13 patients, of which 7 had peritoneal biopsy from the site of suspected tubercles and 6 patients had mesenteric lymph node biopsy.

Adhesiolysis in 5 patients, (16.6%), of which 4 patients had abdominal adhesions and 1 patient had pelvic adhesions. Pelvic fluid was collected for analysis in 2 patients and Appendectomy was done in 5 patients. In one patient with Meckel's diverticulum, the ileum was delivered at the umbilical port and excision with a wide base with suturing was performed. No intervention was done in 4 patients. Table-2 summarizes the procedures carried out.

A Final diagnosis was established in 26 patients – Abdominal Tuberculosis in 13 Patients (43.3%), Adhesions in 5 Patients (16.6%), Recurrent Appendicitis in 5 Patients (16.6%), Pelvic Inflammatory Disease in 1 Patients (3.3%), Ovarian cyst in 1 Patients (3.3%), Meckel's diverticulum in 1 Patients (3.3%) No

Laparoscopic findings	No. Of patients
Abdominal tuberculosis	13
Adhesions	5
Recurrent appendicitis	5
Pelvic inflammatory disease	1
Ovarian cyst	1
Meckel's diverticulum	1
Inconclusive laparoscopy	4

**Table-1:** Summary of laparoscopic diagnosis. All findings were confirmed by laboratory investigations.

Procedure	No. of Patients	Percentage of Total (30)
Biopsy	13	43.3 %
Adhesiolysis	5	16.6 %
Pelvic fluid aspiration	2	6.6 %
Meckel's diverticulectomy	1	3.3%
Appendectomy	5	16.6 %
No intervention	4	12 %

**Table-2:** Procedures carried out at laparoscopy

diagnosis could be established in 4 of the 30 patients.

Post Operative complications were seen in 3 patients. 1 patient complained of bloating for 48 hrs. post-op. 1 patient, had post-operative shoulder pain lasting for 1 day. 1 patient had post-operative wound infection at the site of umbilical trocar. This was the patient in whom the bowel had been delivered at the umbilical port site for Meckel's diverticulectomy.

26 patients found significant subjective relief of pain post operatively while four patients reported no decrease in pain. Of these four patients, two patients had inconclusive findings, one had abdominal tuberculosis diagnosed on biopsy and one had an ovarian cyst with pelvic fluid. Of the four patients with inconclusive findings and no intervention performed, two patients reported significant decrease in pain post operatively.

## DISCUSSION

Chronic abdominal pain is, in standard teaching regarded as intermittent or continuous pain lasting for more than twelve weeks. Despite the availability of a wide array of investigations, a large number of patients with chronic abdominal pain either remain undiagnosed or do not have a definitive diagnosis. It is a significant clinical problem that often is frustrating for the patient as well as for the physician.<sup>1-2</sup> In our study, 26.6% of the patients were in the age group of 26 to 35 years, with a mean age of 34 years. Other studies have documented the occurrence of Chronic abdominal pain in patients leading an active lifestyle.<sup>3</sup> The causes of chronic abdominal pain include organic disorders like abdominal tuberculosis, intestinal adhesions, appendicitis, pelvic inflammatory disease as well functional disorders like IBS, functional dyspepsia and motility disorders. It is imperative to rule out any organic cause of pain before a patient is categorized as having a functional abdominal pain. In our study, 43.3% of patients had a diagnosis of abdominal tuberculosis. Other studies from India have reported similar results.<sup>4</sup> Malik et al, in their study on 133 patients undergoing diagnostic laparoscopy, found that 109 (82%) were diagnosed to have abdominal tuberculosis.<sup>5</sup> The common symptoms in these patients included pain in abdomen, changing bowel habits, loss of weight, and generalized weakness. Rai et al, in their study had a majority of patients from the Indian subcontinent.<sup>6</sup> 23 out of 25 patients that underwent diagnostic laparoscopy for suspected abdominal tuberculosis had this diagnosis confirmed. This of course correlates with the fact that prevalence of tuberculosis is high in India. The peritoneal form of the disease is difficult to diagnose with routine investigations. The intestinal form starts out as a mucosal disease, with stricture formation. This may be difficult to diagnose on CT scan, and laparoscopy provides the means of identifying peritoneal and intestinal tuberculosis. Empirical treatment of patients with suspected abdominal tuberculosis is increasingly discouraged, and laparoscopy provides the means for a definitive diagnosis.<sup>7</sup>

Adhesions, whether congenital or postoperative are also difficult to diagnose with imaging techniques and laparoscopy provides the means of diagnosing as well as performing intervention in the form of adhesiolysis in these patients. 5(16.6%) patients in our study were found to have post-operative peritoneal adhesions. In other studies, a much larger percentage of patients with chronic abdominal pain were found to have adhesions.<sup>8-9</sup> There is no debate over the division of congenital adhesions

or bands. However, it has long been felt that postoperative or inflammatory adhesions are bound to re-form, and no purpose is served by adhesiolysis; there is, in addition, the risk of causing bowel trauma during the procedure.<sup>10</sup> However, more recently, relief of chronic pain and a high degree of patient satisfaction following adhesiolysis has been reported.<sup>11-13</sup>

Five patients in our study were found to have recurrent appendicitis. The diagnosis was made based on the presence of adhesions between the appendix and surrounding structures, presence of a long, kinked appendix or presence of a faecolith. Recurrent Appendicitis as an entity has been well documented and has been a common diagnosis at laparoscopy in a number of studies.<sup>14-16</sup> All 5 patients in our study reported relief of their pain following appendectomy.

Suspected intra-abdominal malignancy has also been an indication for diagnostic laparoscopy. One such study reported confirmation of a diagnosis of intra-abdominal malignancy in all cases in which it was suspected, after laparoscopy.<sup>17</sup>

In our study, 26(86.6%) of patients had a definitive diagnosis after laparoscopy. Similar findings were reported by Onders et al and Salky et al.<sup>3,18</sup>

In our study, 26 (86.6%) patients found significant pain relief. Relief of pain was also present in 2 patients with no findings at laparoscopy. Other studies have reported a high percentage of patients having pain relief after diagnostic laparoscopy.<sup>3,19</sup>

Specifically, in the case of patients with adhesions as the cause of pain, Swank et al in a randomized trial showed no significant difference between patients who underwent diagnostic laparoscopy alone and those that underwent adhesiolysis, although both groups had substantial relief of pain.<sup>20</sup>

Our study was carried out with a relatively small number of patients. Also, these patients were not separated into categories based on pain pattern and suspected preoperative diagnosis. A larger study, with subgroups of patients thus divided is required to more clearly define the role of diagnostic laparoscopy.

Conclusion: Patient history, the pattern of pain, a consideration of prevalence and routine investigations can give a clue to the possible diagnosis in chronic abdominal pain. Laparoscopy offers a definitive diagnosis in a large number of these patients and also provides therapeutic intervention. Relief of pain is obtained in a large number of these patients, making laparoscopy a useful tool in the management of chronic abdominal pain.

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