

Laparoscopy as a diagnostic tool in chronic abdominal pain

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Abstract

Background: After ruling out most common diseases in patients with chronic abdominal pain by careful investigation, many patients still remain undiagnosed and represents a major diagnostic challenge to the surgeon. Laparoscopy has proved to be an important tool in such cases, whose diagnosis remains uncertain, despite extensive investigations. This study was undertaken to evaluate the potential benefits of diagnostic laparoscopy in cases of chronic abdominal conditions with uncertain diagnosis. **Material and Methods:** Diagnostic Laparoscopy was done on 30 patients of 12 to 65 years of age from both sex with history of abdominal pain for 3 months or more with uncertain diagnosis after all the conventional investigation modalities. **Results:** Out of 30 patients, 15 (50%) had duration of pain between 7-12 months and 43.33% of them being in the periumbilical region. 70% of the patients had a previous history of abdominal surgeries. The most common finding at laparoscopy in our study was post-operative adhesions (60%) followed by recurrent appendicitis (16.66%). Laparoscopy established the diagnosis in 86.67% of our patients. **Discussion:** Laparoscopy is safe, quick and effective modality of investigation for chronic abdominal pain. It prevents unnecessary laparotomy in a significant number of cases. It has a definitive role in the management of patients with chronic pain abdomen and should be an important investigative tool in the armamentarium of all practicing surgeons.

Key Words: Chronic abdominal pain, uncertain diagnosis, diagnostic laparoscopy.

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INTRODUCTION

Patients with chronic abdominal pain are amongst the most difficult to manage. Potentially it can be unrewarding for both the patient and the treating physician. Chronic abdominal pain is a difficult complaint¹. It leads to evident suffering and disability, both physically and psychologically. Chronic abdominal pain is associated with poor quality of life². Most patients in this group would have already undergone many diagnostic procedures. More than 40% of the patients presenting with chronic abdominal pain have no specific

etiological diagnosis at the end of their diagnostic workup³⁻⁶. These searches for pathology often include such procedures as upper and lower gastrointestinal endoscopies, computerized tomography and screening for undetected carcinoma. After ruling out most common diseases by careful investigation, many patients are still undiagnosed and represents a major diagnostic challenge to the surgeon⁷. When the limits of reasonable non-invasive testing are reached in an individual patient's illness, which is likely to occur without the extensive testing practiced today, the surgeon is often consulted. A high chance of a non-therapeutic abdominal exploration naturally results. Clearly diagnostic laparoscopy is an important intermediate option between refusing to explore a patient's abdomen and performing a laparotomy⁸. Laparoscopy, a medical science achievement developed in the twentieth century, offers a simple, rapid, and safe method to evaluate and diagnose intra-abdominal diseases. Laparoscopic surgical techniques are being put on an increasing number of surgical treatments. Patients are attracted to the reduced pain and faster recovery associated with procedures and surgeons have found that laparoscopic surgery matches

traditional open procedure in terms of effectiveness⁹. The success of laparoscopy in making definite and reliable diagnosis of abdominal disorders over the past two decades, has firmly established in the available resources of a general surgeon to perform this procedure safely. Diagnostic and therapeutic laparoscopy has its most important and ultimate application in the developing world. Laparoscopy can be proved to be an important tool in the minimally invasive exploration of selected patients with chronic abdominal disorders, whose diagnosis remains uncertain despite exploring the requisite laboratories and imaging investigation like Ultra Sonography and CT Scan. Diagnostic laparoscopy can be done under direct vision with simple equipment as it does not require a video camera or the electronic gadgetry associated with laparoscopic surgery. With advances in optics, laparoscopy allows perfect visual examination of the peritoneal cavity and further makes possible histological diagnosis of target biopsy under vision. Laparoscopy is as much a surgical procedure as an exploratory laparotomy, often just as informative, and to the trained surgeon affords a better view of the entire peritoneal cavity than the usual exploratory laparotomy. To achieve a high rate of positive diagnosis from laparoscopy requires much more than correct technique, it requires a thorough background of surgery, sound clinical acumen as also knowledge and awareness of abdominal pathology¹⁰. In many cases it prevents unnecessary or negative laparotomy. The rapid recovery and return to normal activity that follow diagnostic laparoscopic surgery provide an extra incentive for the surgeon to adopt more laparoscopic techniques. It is a useful tool for diagnosis, staging and exclusion of cancer. It decreases the number of laparotomies for non-resectable malignant lesions. In many specific conditions, it may be more effective investigation than CT scan or MRI, especially in the developing world. As biopsy under vision is targeted, histological diagnosis is possible in all patients. This study was undertaken to evaluate these potential benefits of diagnostic laparoscopy in cases of chronic abdominal conditions with uncertain diagnosis.

MATERIAL AND METHODS

This prospective study included 30 patients with chronic abdominal pain in age group of 12 to 65 years in both the sex satisfying the inclusive and exclusive criteria during study period. Patients of 12 to 65 years of age with history of abdominal pain for 3 months or more, if physical examination and diagnostic tests were unrevealing, with previous history of abdominal operation and willing to participate in study were included. Pregnant women, patients with conditions which contraindicates laparoscopic surgery and HIV positive

patients, due to unavailability of separate laparoscope in our hospital were excluded from the study. Detailed history was obtained from patient himself. Laparoscopy was performed after completion of all the necessary hematological, biochemical, radiological, and ascitic fluid analysis, gastrointestinal endoscopic and imaging techniques, and Mantoux test (when indicated).

Operative technique

All surgeries were carried out under general anaesthesia. All patients had a Ryle's tube inserted and bladder catheterized prior to anaesthesia. Pneumoperitoneum was created using Hasson's technique. A 10 mm umbilical camera port was inserted and two lateral 5mm ports depending on the organ of interest and the suspected pathology. The sites of port insertion varied depending on the presence or absence of previous abdominal surgery scars. Diagnostic laparoscopy of the abdomen was carried out carefully inspecting the entire visceral contents of the abdomen for any pathology. Starting from the liver, the gall bladder, anterior surface of the stomach, large intestine, entire length of small intestine with particular emphasis on appendix and terminal ileum, anterior surfaces of the retroperitoneal organs, uterus, fallopian tubes and ovaries and peritoneal surface. Adhesions between the bowel loops or to the anterior abdominal wall was also looked for. The surgical procedure carried out were depending on the intra operative findings and as per indications which ranged from biopsy from suspicious lesions to adhesiolysis to appendectomy. All the ports were closed using absorbable suture materials at the end of the procedure. All patients were subjected to laparoscopic evaluation for their conditions. The findings and outcomes of the laparoscopy were recorded and analysed.

RESULTS

A total of 30 patients were selected for the study, in which the diagnosis remained uncertain despite requisite investigations. The majority of the patients 11 (36.6%) were in the age group of 21-30 years followed by 9 (30%) in 31-40 years. There were 10 males and 20 female patients in the study with ratio of 1:2. The duration of pain ranged between 3 months to 3 years. Out of 30 patients, 21 patients had previous history of abdominal surgery. Appendicectomy and lower section caesarean section was performed in six patients each. 5 were operated for hysterectomy. The most common site of pain was theperiumbilical region (43.3%) followed by diffuse (30%).

Table 1: Findings at laparoscopy and intervention done

Diagnosis	Procedure	No. of patients n (%)
Post-operative adhesions	Adhesiolysis	18 (60%)
Recurrent appendicitis	Appendectomy	5 (16.66%)
Normal Study	No Intervention	4 (13.33%)
Chronic cholecystitis	Cholecystectomy	1 (3.3%)
Mesenteric lymphadenopathy	Biopsy	1 (3.3%)
Tuberculosis (ileal strictures)	Resection, anastomosis with Cat-1 ATT	1 (3.3%)

In our study of 30 patients, the most common finding was post-operative adhesions, in 60% of patients. Most of the patients in this group were females and had a past history of abdominal surgery, caesarian section (LSCS) and appendectomy in most cases. Adhesiolysis was done in all these patients. The next most common finding at

laparoscopy in our study was recurrent appendicitis (16.6%). Appendectomy was done in such patients. Subsequent histopathological examination confirmed our diagnosis in most of these cases. One of the patient in this group had adhesions between the appendix and the lateral abdominal wall. Adhesiolysis and appendectomy was done. Histopathological examination (HPE) turned out to be chronic inflammation in the appendix and hence included in this group for statistical analysis (Fig. 1-4). The next most common finding at laparoscopy in our study was a normal study 13.3%. These patients were just observed and followed up. We did laparoscopic cholecystectomy for 1 of our patients. HPE confirmed our findings in this group of patients. Mesenteric lymph node biopsy was done in 1 patient with tuberculosis and HPE showed tuberculous lymphadenitis and started on anti-tubercular drugs.

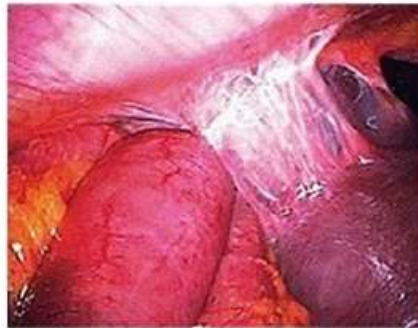


Figure 1a:

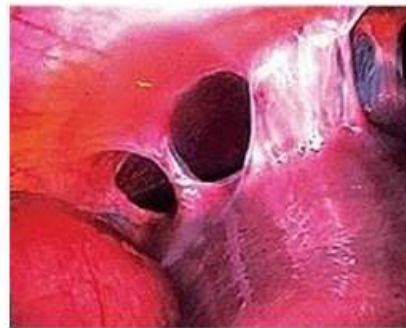


Figure 1b:

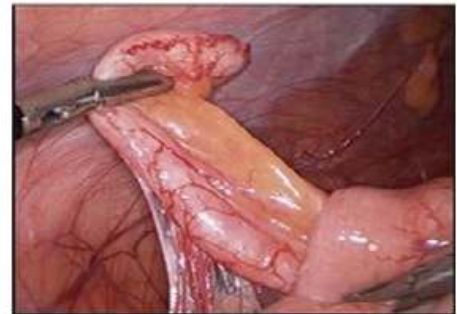
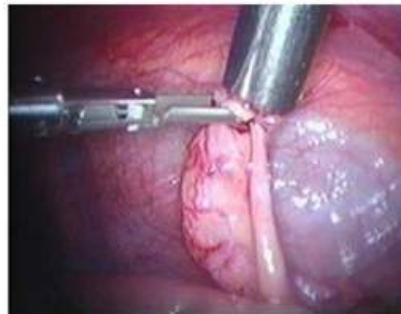


Figure 1(a,b): Per operative Finding- Adhesions

Figure 2: Per operative Finding- Strictures

Figure 3: Recurrent Appendicitis

Figure 4: Recurrent Appendicitis with adhesions



Diagnosis of ileal tubercular strictures was made in 1 patient. This patient underwent ileo-ileal resection and anastomosis of the long segment stricture and stricturoplasty for another short segment stricture by open method. Post operatively, he was started on anti-tubercular drugs and the patient followed up. Histopathological examination confirmed tuberculosis.

Despite significant population of female in reproductive age group, no obvious gynaecological causes of chronic abdominal pain were found except previous operated adhesions with anterior abdominal wall. As most of these female patients underwent LSCS (6), tubectomy (2), hysterectomy (5), laproscopicadhesiolysiswas done in all these patients. The average length of the operative time

was 67.14 minutes and one patients required conversion to an open procedure due to technical difficulties. Post-operative hospital stay ranged from 4 to 11 days with a mean duration of stay of 5.5 days. In most of our cases there was no post-operative complications except in three patients who developed minor surgical site infection which was managed conservatively by appropriate antibiotic cover and alternate day wound dressing. No mortality was encountered in our study group. During the follow up period, all patients were re-evaluated for pain. The patients were reviewed at one month and three months post operatively. Therapeutic intervention done at the time of diagnosis relieved 76.6% of patients of their pain at the end of three months.

DISCUSSION

Chronic abdominal pain is a common problem dealt not only by the general surgeon but by all practicing physicians. Even after extensive non-invasive work up of such patients, the exact cause of pain abdomen is seldom known. The aim of our study was to study the efficacy of diagnostic laparoscopy as an investigative modality in the diagnosis and management of patients with chronic pain abdomen. Diagnostic laparoscopy makes it possible for the surgeon to directly visualize the contents of the abdominal cavity better than any other investigative modality. The study confirmed that in this difficult patient group, laparoscopy could safely identify abnormal findings and can improve the outcome in a majority of the cases. There were 10 males and 20 female patients in the study. The age group of patients in this study ranged from 12 to 65 years with the average age being 33 years. In studies by Klingensmith *et al*¹¹ and Raymond *et al*¹² the majority were women. The average age in their study were 49 and 42 years respectively. As the aim of this study was to evaluate the role of laparoscopy as a major diagnostic tool in patients presenting with a chronic abdominal condition, with uncertain diagnosis, it has been clearly observed that laparoscopy has a diagnostic rate of 86.6% in these patients. No abnormality was found in the remaining 4 patients (13.33%) who were just observed without any intervention. Majority i.e., 18 (60%) of the patients in our series were found to have intestinal adhesions secondary to a prior abdominal surgery, adhesiolysis was done as a therapeutic procedure. Lavonius M *et al*¹³ in their study of laparoscopy for chronic abdominal pain in 46 patients reported post-operative adhesions in 63% of cases. In a study by Klingensmith *et al*¹¹ involving 34 patients, 56% of them underwent adhesiolysis. In a study by Shayani *et al*¹⁴ involving 18 cases, laparoscopic adhesiolysis resulted in a 77.8% cure rate from chronic abdominal pain. In a study by Dunker S *et al*¹⁵ laparoscopic adhesiolysis resulted in a

positive outcome in more than 50% of patients. Four (13.33%) patients in our study did not have any pathology detected per operatively. In a study by Salky B A *et al*¹⁶ involving 265 patients, normal laparoscopic findings were recorded in 24%. In a study by Baria *et al*¹⁷ involving 50 patients, 10% of them had no identifiable cause detected after laparoscopic examination. In a study by Velpen *et al*¹⁸, 23% of patients with uncertain diagnosis at the end of the procedure was reported. In a study by Klingensmith *et al*¹¹ involving 34 patients, 26% of patients needed no operative intervention other than laparoscopic exploration. In a study by Raymond *et al*¹² involving 70 patients, no abnormality was detected in 14.2 % of cases.

Table 2: Comparison of studies with diagnostic efficacy of Laparoscopy

Study	No. of patients	Diagnosis achieved (%)
Raymond <i>et al</i> [12]	70	85.7
Baria <i>et al</i> [17]	50	90
Miller <i>et al</i> [19]	59	89.8
Schrenk <i>et al</i> [20]	92	87
Andreollo <i>et al</i> [21]	168	86.3
Present study	30	86.6

Recurrent appendicitis was diagnosed in 5 (16.66%) of patients in our study. Histopathological examination confirmed the diagnosis in 4 of them. One of the specimens was reported normal. This is still justifiable because it makes the diagnosis of appendicitis less likely if the patient complains of similar pain in the future. Laparoscopy is a useful technique for the diagnosis and treatment of abdominal pain even if the appendix is normal on inspection⁵⁴. In a study by Raymond *et al*¹² involving 70 patients, appendiceal pathology was detected in 7.14% of cases. Recurrent appendicitis patients were labelled based on previous laboratory and ultrasonography reports, who underwent conservative treatment previously for chronic appendicitis and subsequent histopathological report also proved as chronic inflammation of appendix in 4 out of 5 patients. Therapeutic intervention done at the time of diagnosis relieved 76.6% of patients of their pain at the end of three months. Laparoscopy is safe, quick and effective modality of investigation for chronic abdominal pain. It has a high diagnostic and therapeutic efficacy. Ability to pin point a cause for the abdominal pain or exclude a more major cause for pain not only avoids further investigations but also plays a significant role in alleviating the fears in the minds of the patients. Not only does laparoscopy point to a diagnosis, it has the added advantage that therapeutic intervention can be done at the same sitting in most cases thus avoiding another hospitalization or another exploration of the abdomen.

Laparoscopy prevents unnecessary laparotomy in a significant number of cases. In conclusion, diagnostic laparoscopy has a definitive role in the management of patients with chronic pain abdomen and should be an important investigative tool in the armamentarium of all practicing surgeons.

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