

## Original Research Article

# Role of diagnostic laparoscopy in chronic abdominal pain

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### ABSTRACT

**Background:** Chronic abdominal pain is a common disorder both in general practice and in hospitals. Although patients with this type of pain may have undergone numerous diagnostic workups, including surgery, their pain remains a challenge to all known diagnostic and treatment methods. Laparoscopy can identify abnormal findings and improve the outcome in patients with chronic abdominal pain, as it allows surgeons to see and treat many abdominal conditions that cannot be diagnosed otherwise.

**Methods:** A prospective longitudinal study was conducted from August 2016 to September 2017 in the Surgery Department of Vinayaka Missions Kirupananda Variyar Medical College, Salem. 50 patients with abdominal pain for 3 months and above were included in the study. Detailed history was recorded from patients and thorough clinical examination was performed. The findings were recorded in the proforma.

**Results:** The most common laparoscopy finding among the study subjects was dense adhesions (26%) followed by abdominal TB (18%) and mesenteric lymphadenopathy (16%). 88% of the study subjects had a total relief of their abdominal pain and 6% of the patients felt that the pain was reduced and for the remaining 6% the pain was still persistent.

**Conclusions:** The efficacy of diagnostic laparoscopy was 90% in the current study. Laparoscopy has an effective diagnostic role in evaluating patients with chronic abdominal pain, in whom conventional methods of investigations have failed to elicit a certain cause. The therapeutic value of diagnostic laparoscopy is also accepted, well-appreciated, and it cannot be underestimated.

**Keywords:** Diagnostic laparoscopy, Chronic, Abdominal, Pain, Therapeutic

### INTRODUCTION

Chronic abdominal pain is a common disorder. Although patients with this type of pain may have undergone numerous diagnostic workups, including surgery, their pain remains a challenge to all known diagnostic and treatment methods. More than 40% of the patients presenting with chronic abdominal pain had no specific etiological diagnosis at the end of their diagnostic workup.<sup>1</sup> Chronic abdominal pain is associated with poor quality of life and significant levels of depressive symptoms.<sup>2,3</sup> The most common organic conditions

include intestinal adhesions, biliary causes, and appendicular causes, while functional conditions include irritable bowel disease, functional dyspepsia, and various motility disorders.<sup>4-9</sup> Abdominal wall pain is also common and frequently mistaken for visceral pain.<sup>10,11</sup> After ruling out common diseases by careful investigations, many patients are still undiagnosed and represent a major diagnostic challenge to the surgeon.<sup>12</sup> With the introduction of laparoscopic surgery, a new tool has been added to our knowledge. The use of this new technology in the diagnosis and management of chronic abdominal pain has been tried in previous studies.<sup>13</sup>

Laparoscopy can identify abnormal findings and improve the outcome in a majority of patients with chronic abdominal pain, as it allows surgeons to see and treat many abdominal conditions that cannot be diagnosed otherwise.<sup>14</sup> It is a safe and effective tool and can establish the etiology and allows for appropriate interventions in such cases.<sup>15</sup> Abdominal adhesions are the most likely findings, especially in patients with a past history of abdominal operations.<sup>16</sup>

However, the role of laparoscopy in chronic abdominal pain is still debated by some authors who deny its value in adhesiolysis and consider it controversial and not evidence-based, and therefore, do not recommend it as a treatment for adhesions in patients with chronic abdominal pain.<sup>17</sup>

A diagnostic laparoscopy could be a minimally invasive option to explore the abdominal cavity. The present-day laparoscope allows 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>18,19</sup> Laparoscopic surgery has modified the management of many surgical diseases. Diagnostic laparoscopy is now accepted as the preferred primary approach to many disease processes.

## METHODS

A prospective longitudinal study was conducted for a period from August 2016 to September 2017 in the Surgery department of Vinayaka Missions Kirupananda Variyar Medical College, Salem, Tamil Nadu. A total of 50 patients with abdominal pain for 3 months and above were included in the study. The study was conducted after getting the clearance from the institutional ethical committee and the informed consent from all the patients included in our study. Detailed history was recorded from patients and thorough clinical examination was performed. The findings were recorded in the proforma. The recorded data included demographics, length of time; it had been presented, location of pain, patient's abdominal examination and diagnostic studies performed. Intraoperative findings and operative interventions undertaken were also identified. Haemoglobin, total count, differential count, erythrocyte sedimentation rate, urine microscopy was the basic investigations done for all patients. Random blood sugar, blood urea nitrogen, and S. creatinine, chest X-ray, electrocardiography and stool for ova, cyst and occult blood were done when indicated. Commonly performed imaging studies included plain abdominal radiographs, ultrasounds studies. Barium studies, upper gastrointestinal and lower gastrointestinal endoscopy were done when indicated. The surgical methods employed were as per etiology.

All surgeries were done under general anaesthesia, all patients were catheterised and Ryle's tube was put. After pneumoperitoneum with veress needle at the rate of 1-2.5

l/min so that end point of intra-abdominal pressure should not exceed 10-12 mmHg, 10 mm umbilical trocar and two 5 mm lateral trocars were put. The laparoscopy was started by a diagnostic inspection of liver, gallbladder, and anterior surface of stomach, large bowel, small bowel, appendix, gynecological organs and peritoneal surfaces.

After laparoscopy, 5 mm trocars were removed under visual control, the air was released from intra-abdominal space and 10 mm trocar was removed. All 5 mm wounds were closed in one layer with absorbable sutures and 10 mm umbilical wound with non-absorbable suture.

## Statistical analysis

Mean and SD was calculated for all the parametric variables. Proportions were derived for all the qualitative variables. Chi-square test was used for testing the test of significance between the two qualitative variables.

## RESULTS

The most common laparoscopy finding among the study subjects was dense adhesions (26%) followed by abdominal tuberculosis (TB) (18%) and mesenteric lymphadenopathy (16%).

**Table 1: Distribution of the study subjects based on the laparoscopy findings.**

Laparoscopy findings	Frequency	Percentage (%)
Contracted gall bladder	6	12
Dense adhesions	13	26
Gangrenous appendix	7	14
Mesenteric lymphadenopathy	8	16
Abdominal TB	9	18
Right ovarian cyst	2	4
No abnormality detected	5	10
<b>Total</b>	<b>50</b>	<b>100</b>

**Table 2: Distribution of the study subjects based on the type of intervention.**

Type of intervention	Frequency	Percentage (%)
ATT	15	30
Appendicectomy	7	14
Adhesiolysis	15	30
Cholecystectomy	6	12
Cyst aspiration	2	4
Conservative management	5	10
<b>Total</b>	<b>50</b>	<b>100</b>

Anti-tuberculosis treatment was given for 30% of the patients who had presented with abdominal TB and mesenteric lymph nodes. Adhesiolysis was performed in 30% subjects and for 14% appendectomy was done for gangrenous appendix and for patients with contracted gall bladder cholecystectomy was performed

Patients with ovarian cyst underwent a cyst aspiration and for the remaining 10% of the patients conservative management was given.

**Table 3: Patients pain response after diagnostic laparoscopy.**

Pain response	Frequency	Percentage (%)
<b>Relief</b>	44	88
<b>Reduced</b>	3	6
<b>Persistent</b>	3	6
<b>Total</b>	50	100

88% of the study subjects had a total relief of their abdominal pain and 6% of the patients felt that the pain was reduced and for the remaining 6% the pain was still persistent.

## 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>20,21</sup>

The role of laparoscopy in chronic abdominal pain is still debated by some authors who deny its value in adhesiolysis and consider it controversial and not evidence-based, and therefore, do not recommend it as a treatment for adhesions in patients with chronic abdominal pain.<sup>22,23</sup> Diagnostic laparoscopy makes it possible for the surgeon to visualize surface anatomy of intra-abdominal organs with greater details better than any other imaging modality. However, laparoscopy has got its own limitations such as non-visualization of deep parenchymal organs, processes of retroperitoneal space and the inner surface of hollow organs, and not allowing the surgeon to palpate the organs.<sup>24</sup> Idiopathic chronic abdominal pains are among the most challenging and demanding conditions to treat across the whole age spectrum. Potentially it can be unrewarding for both patients and the medical team. Studies conducted with large community samples or hospital populations imply chronic abdominal pain is a pervasive problem. Abdominal pain was the third most common complaints of individuals enrolled in a large health maintenance organization.<sup>24</sup>

All patients included in this study had chronic abdominal pain, they were subjected to laparoscopic evaluation after exclusion of all organic causes of the pain by detailed history, complete clinical examination, laboratory tests, radiographic evaluations, and upper gastrointestinal or lower gastrointestinal endoscopy were applicable. The study confirmed that in this difficult patient group, laparoscopy could safely identify abnormal findings and can improve the outcome in a majority of cases. The subjective benefit of laparoscopy for both the operating surgeons and for the patients is the definitive answers that no serious pathology is found intra-abdominally. Therefore, the placebo effect of laparoscopy may explain at least partly the patient's pain relief.<sup>25</sup>

In our study 43 (86%) patient had pathological findings identified at the time of laparoscopy. Miller et al reported that laparoscopy provided diagnoses in 89.8% of patients.<sup>26</sup> These results compare favourably with our series and another study done by Lal et al had shown that laparoscopy was able to detect the pathologies in 84% of the patients with chronic abdominal pain.<sup>27</sup>

In our study, 30 (60%) patients had a definitive therapeutic procedure performed. In our study, most common findings was adhesions followed by abdominal TB and the results were almost in par with the study done by Arya et al and the study done by Lal.<sup>27,28</sup>

Abdominal tuberculosis is a common disease in India, as was seen in present study. Laparoscopy has a great deal to offer an early diagnosis of abdominal tuberculosis and treatment.

Krishnan et al reported that in patients suspected to have abdominal tuberculosis without evidence of extra abdominal disease, early laparoscopy may be useful to establish a histological diagnosis with acceptably low morbidity (8%).<sup>29</sup> Rai et al reported abdominal tuberculosis in (92%) patients of the 25 patients in whom laparoscopy was performed.<sup>30</sup>

In our study, common finding in abdominal tuberculosis are peritoneal or visceral tubercles, varying from 2 mm to 1 cm. Ascites and small bowel adhesions also seen. For the tubercular peritonitis laparoscopy is of special practical benefit in under privileged area where high end investigations are not available. Our study reported improvement or resolution of symptoms in patients with abdominal tuberculosis in 90% of the patients with chronic abdominal pain.

Recurrent and chronic appendicitis do exist as disease of the appendix. Investigation of the appendix should be included in the work up of chronic abdominal pain, when no other diagnosis is readily apparent. Doubt remains whether the appendix should be removed in the case of inconclusive findings. In a study by Fayez et al, records of chronic abdominal pain undergoing appendectomy were reviewed 92% of patients appendices had abnormal

histological findings and the 95% of patients had resolution of pain.<sup>31</sup>

Raymond et al, reported improvement of pain in 74% of patients with chronic right lower abdominal pain and in our study it was 88%.<sup>32</sup>

In our study both the patients who underwent appendectomy for chronic abdominal pain had resolution of pain. In our study 7 (14%) patients did not have any pathological findings on laparoscopy. Among these 7 patients, 2 patients were subjected to appendectomy owing to the hypereamia of the appendix. Remaining 5 patients were managed conservatively, in which 3 patients had resolution of pain.

Pajnen et al, reported that laparoscopy alleviates the symptoms in more than 70% of patients. This correlate well with our study and it should be considered if other diagnostic tests are negative.<sup>33</sup>

These studies prove beyond doubts that diagnostic laparoscopy can be considered as an option in patients with chronic abdominal pain.

Table 4 shows the distribution of the study subjects based on the nature of pain. 56% of the study subjects had intermittent type of pain and the remaining 44% of them had continuous pain.

**Table 4: Distribution of the study subjects based on the nature of pain.**

Nature of pain	Frequency	Percentage (%)
<b>Continuous pain</b>	22	44
<b>Intermittent pain</b>	28	56
<b>Total</b>	50	100

Based on the findings of above studies it is also clear that early diagnostic laparoscopy can prevent the delay in the arrival at a definite diagnosis and institution of appropriate treatment. The efficacies of these studies were >80% giving an indication that diagnostic laparoscopy has got a considerable impact in managing this difficult group of patients. The overall positive outcome seen in the above-mentioned studies after diagnostic laparoscopy compare favorably with the results obtained by us. Hence, it can be concluded that it has an effective diagnostic role in evaluating patients with chronic abdominal pain, in whom conventional methods of investigations have failed to elicit a certain cause. The therapeutic value of diagnostic laparoscopy is also accepted, well-appreciated, and it cannot be underestimated. Being minimally invasive, laparoscopy has solved the problem of delay in the definite diagnosis and has led to considerable reduction in the number of negative exploratory laparotomies. It has also significantly reduced the number of investigation these patients are subjected to, days of hospital stay, which leads to substantial reduction in the cost of the treatment.

Diagnostic laparoscopy also solves the problem of dissatisfaction of both the surgeon and the patient which is one of the main issues in the management of these patients.

## CONCLUSION

The efficacy of diagnostic laparoscopy was 86% in the current study. Laparoscopy has an effective diagnostic role in evaluating patients with chronic abdominal pain, in whom conventional methods of investigations have failed to elicit a certain cause. The therapeutic value of diagnostic laparoscopy is also accepted, well-appreciated, and it cannot be underestimated. Being minimally invasive, laparoscopy has solved the problem of delay in the definite diagnosis and has led to considerable reduction in the number of negative exploratory laparotomies. It has also significantly reduced the number of investigation that these patients are subjected to, days of hospital stay, which leads to substantial reduction in the cost of the treatment. Diagnostic laparoscopy also solves the problem of dissatisfaction of both the surgeon and the patient, which is one of the main issues in the management of these patients.

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