

# Laparoscopy: A tool In diagnosis of lower abdominal pain

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## ABSTRACT

**Background:** Patients with lower abdominal pain in whom routine investigations are negative, continue to pose a challenge to the clinician. In many patients laparotomy is the only alternative.

**Aim:** The aim of this study was to evaluate and establish role of diagnostic laparoscopy in unexplained lower abdominal pain in the era of therapeutic laparoscopy.

**Settings and Design:** In this prospective study, patients with lower abdominal pain of more than 6 months duration, coming to surgery OPD of our institute, over a period of 27 months were considered for Diagnostic Laparoscopy if diagnosis was not possible with conventional methods.

**Material and Methods:** Diagnostic laparoscopy was performed in 49 patients. These patients represented 25% of patients undergoing investigations for lower abdominal pain.

**Results:** Laparoscopy yielded positive findings in 44 (90%) of these patients. Abdominal tuberculosis, appendicitis and gynaecological pathology were the major findings. Therapeutic procedures were performed in 18 patients (laparoscopically in 13). There was no complication in this series. So the patients who would have remained undiagnosed otherwise, were diagnosed and given appropriate treatment.

**Conclusion:** This study establishes role of Diagnostic Laparoscopy as a safe and one of the most fruitful investigative tool in undiagnosed lower abdominal pain.

## KEY WORDS

Laparoscopy, Lower abdominal pain, Diagnosis

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## INTRODUCTION

In surgical practice we frequently encounter patients with lower abdominal pain, who despite frequent routine examination and all major investigations remain undiagnosed and are often labelled as functional. Many of them undergo appendectomy, some are put on anti-tubercular treatment specially in tropical countries, while females often end up taking anti-androgens. Thus the patient with lower abdominal pain continues to pose challenges to the diagnostic capability of the general surgeon. Laparoscopic literature has discrete reports documenting diagnostic accuracy of laparoscopy in abdominal pain. Introduction of laparoscopic cholecystectomy has generated a new interest among general surgeons about diagnostic capability of laparoscopy.<sup>1</sup> The aim of this study was to evaluate and

establish role of diagnostic laparoscopy in unexplained lower abdominal pain in the era of therapeutic laparoscopy.

## MATERIALS AND METHODS

In this prospective study a total of 197 patients with lower abdominal pain of more than 6 months duration presented at surgery out patient department of Himalayan Institute of Medical Sciences from December 1998 to March 2001 (27 months period). All the patients were from Uttaranchal and adjoining areas of Uttar Pradesh. All these patients were thoroughly interrogated and examined in detail. This included rectal and vaginal examination (by an experienced gynaecologist), besides abdominal and rest of the systemic examination. Following

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investigations were done uniformly in all these patients:

1. Complete haemogram and ESR
2. Random Blood Sugar, Blood Urea Nitrogen and Serum creatinine
3. Stool routine, microscopy and occult blood
4. Urine routine, microscopy and culture
5. Plain X-ray abdomen
6. X-ray chest
7. Ultrasonography of whole abdomen
8. Upper GI endoscopy
9. Colonoscopy

Some patients were subjected to few additional investigations as indicated by their specific symptomatology e.g.

1. Serology for tuberculosis.
2. Contrast gastro-intestinal studies
3. Ascitic fluid examination
4. CT scan abdomen.
5. Liver function test.
6. Intra venous pyelography
7. Cystoscopy

Diagnosis was possible in 103 (52%) patients after routine clinical examination and these investigations. The main diagnoses of these patients were abdominal tuberculosis, adhesions and genitourinary tuberculosis. The details are shown in the table 1.

Out of the remaining 94, finally only 49 patients agreed for an invasive procedure like Laparoscopy. The duration of pain was several years in many of these patients. All these 49 patients had frequent clinical examinations including gynaecological, and had been through repeated investigations which were found normal. The inclusion and exclusion criteria are shown

in table 2. Informed consent was taken from all the patients. Clearance from ethical committee at our institute was also obtained.

Laparoscopic procedure was performed under general anaesthesia. Each patient received single intravenous dose of Cefuroxime 750 mg. as prophylaxis at the time of induction. 10/5 mm scope was used through umbilical port (March 2000 onwards 5 mm scope is being used). Second port (5/10 mm) was made in right upper abdomen. A third port (5 mm) was added if required in left lower quadrant (Figure 1). Whole of small bowel, ileo-caecal junction, appendix, large bowel, omentum and pelvic organs including uterus,

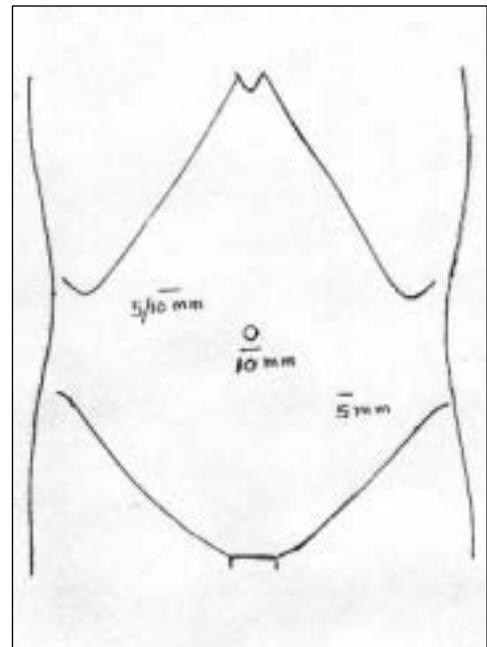


Figure 1: Port sites used for Diagnostic laparoscopy (The third port is optional)

**Table 1: Diagnosis in patients with conventional investigations**

Diagnosis	No. of Patients	Methods of Diagnosis*
Intestinal or Peritoneal Tuberculosis	35	Raised ESR, Ascitic fluid examination, Ultrasonography, Ba meal follow through, Serology and Response to therapy
Adhesions	24	Previous H/O surgery, Plain X-ray abdomen and Laparotomy findings in operated cases
Genito-Urinary Tuberculosis	17	Microscopic hematuria, Urine AFB, Ultrasonography, IVP and Cystoscopy
Endometriosis	10	Clinical history, Vaginal examination, Ultrasonography and Response to Danazol therapy
Fibroid	05	Vaginal examination, Ultrasonography and Response to Danazol therapy
Cystitis	02	Urine Culture and sensitivity, Ultrasonography, IVP and Cystoscopy
Ureteric stone	03	Urine Microscopy, Ultrasonography and IVP
Pelvic Inflammatory Disease	07	Vaginal examination and Ultrasonography
Total	103	

\*This includes history, Clinical features and examination in all cases. CT scan was also done in 37 of these patients.

**Table 2: Criteria for diagnostic laparoscopy**

**Inclusion criteria:** All patients with lower abdominal pain of more than 6 months duration who had

- (i) normal or inconclusive investigations
- (ii) normal or inconclusive gynaecological examination

**Exclusion criteria:**

- (i) Patients undergoing some elective abdominal procedure
- (ii) Uncorrectible coagulopathy
- (iii) Known medical, surgical or gynaecological cause of pain
- (iv) Severely decompensated cardio-respiratory system
- (v) Pregnancy

both tubes and ovaries in females were routinely examined. Any fluid present in the pelvis was aspirated for cytology, biochemistry and culture. Omental or peritoneal biopsy was taken as per suspicion. Appendectomy was performed only if considered inflamed or deformed. Adhenolysis was performed if considered necessary.

**RESULTS**

Patients' age varied from 15 to 58 years. 33 out of 49 patients were females with 11 of them being unmarried. Average duration of whole procedure including laparoscopic therapeutic procedure was 30 minutes. Average hospital stay was 2.5 days. In few cases where any open procedure was performed, average hospital stay was 4 days. Few patients in present series experienced mild side effects of general anaesthesia like nausea and vomiting. But there was no procedure related complication. Most of these patients could have oral feed by next morning. Laparoscopic findings were considered positive if pathological lesion could be related to patient's symptoms.

Diagnosis in 103 patients of nonlaparoscopy group are shown in table 1. This table also shows the main methods used to reach that diagnosis. In general these patients consumed 6 to 18 months of time.

49 patients with lower abdominal pain were evaluated by laparoscopy. Of these 13 patients underwent appendectomy, out of which 3 were open either because of difficult anatomy or some complication of appendicitis. Out of 13 appendectomies, 1 appendix was found normal on histopathology. One patient underwent laparotomy and adhenolysis for severe adhesions. Another patient required resection of small bowel by laparotomy for jejunal diverticulosis. Different procedures done are shown in Table 3. Diagnosis was possible in 44 patients (90%). Abdominal tuberculosis

(Figure 2) and appendicitis were the most frequent pathologies in male patients. In females, gynaecological pathology was most frequently seen, in which genito-urinary tuberculosis was the commonest.

Table 4 lists the operative or pathological diagnosis in patients undergoing laparoscopy. No cause could be identified in 5 patients. These included one patient whose appendix was found to be normal on

**Table 3: Procedures done along with laparoscopy**

Procedures	No. of Patients
Appendectomy	13*
Peritoneal/ Omental Biopsy	12
Pelvic Fluid Study	7
Resection & Anastomosis	1†
Adhenolysis	4‡
Total	37

\*10 Laparoscopic and 3 open

†By Laparotomy for Jejunal Diverticulosis

‡3 Laparoscopic and 1 open



Figure 2: Biopsy being performed from peritoneum studded with tubercles, found in a patient during laparoscopy

**Table 4: Diagnosis in patients after laparoscopy (including histopathology)**

Diagnosis	No. of Patients
Abdominal Tuberculosis	14*
Appendicitis (Chronic/Resolving)	13
Post Operative Adhesions	4
Jejunal Diverticulosis	1
Genito-Urinary Tuberculosis	5
Endometriosis	2
Fibroid Uterus	2
Pelvic Inflammatory Disease	3
No Organic Cause	5†
Total	49

\*Peritoneal-9, Intestinal-5

†Including 1 normal Appendix

pathological examination.

## DISCUSSION

Lower abdominal pain has been a challenge to surgeon as well as gynaecologist. Before the era of therapeutic laparoscopy these patients used to undergo a battery of costly investigations over a period of months, while remaining dissatisfied. Main aim of this study was to evaluate the role of laparoscopy as a major diagnostic tool. In one of the largest series Salky was able to identify pathology in 69 out of 70 patients with either appendicitis or gynaecologic pathology being the main finding.<sup>1</sup> Easter et al had 47% positivity with adhesions being the main finding.<sup>2</sup> Present study clearly shows a diagnostic rate of 90% in patients with lower abdominal pain. Therapeutic laparoscopy has a role in many of these patients. Common pathologies in our study, conducted in Himalayan belt are abdominal tuberculosis, genito-urinary tuberculosis and appendicitis. Easter et al had high incidence of post operative adhesions, majority of which were treated by laparoscopic adhenolysis at the same sitting. However in present study post operative adhesions were seen only in 4 patients. Only explanation for the low incidence of this finding in our study could be possible pre operative exclusion of these patients by careful clinical examination. Some of the diagnoses which were not normally expected came to light during laparoscopy eg. chronic/ resolving appendicitis and jejunal diverticulosis.

Abdominal tuberculosis is a common disease in India, as was seen in present study. Laparoscopy has a great deal to offer in early diagnosis of abdominal tuberculosis. Common findings in abdominal tuberculosis are peritoneal or visceral tubercles varying from 2mm to 1cm. Small bowel adhesions and strictures can also be seen.<sup>3</sup> For tubercular peritonitis laparoscopy is of special practical benefit in underprivileged areas where high end investigations are not available.<sup>4</sup> Laparoscopy is very sensitive for diagnosis of appendicitis whether acute or chronic. It not only detects appendicitis but also avoids negative appendectomy.<sup>2,5,6,7</sup> In our study 12 out of 13 appendectomies had positive pathology histologically. Similarly in females if proper gynaecological pathology is identified by laparoscopy, specific therapy could be instituted soon with great psychological boost to the patient.

It is a useful tool for diagnosis, staging and exclusion of cancer. It decreases the number of laparotomies for

nonresectable malignant lesions.<sup>8</sup> In many specific conditions it may be more effective investigation than CT scan or MRI, especially in developing world. As we target biopsy under vision, histological diagnosis is possible in all patients. One of the objectives of this study was also to find a less invasive alternative instead of a more invasive diagnostic approach like exploratory laparotomy or blind open appendectomy. During Laparoscopy thorough visualization of peritoneal cavity was done and finally only in 4 patients an open procedure or laparotomy was performed, which was needed for effective surgical treatment. In expert's hands laparoscopy is even a better option than laparotomy to visualise the entire abdomen because of video magnification.

There have been no major procedure related complications in most of the studies. Laparoscopy is an invasive procedure and is usually performed under general anaesthesia. Few patients in present series experienced mild side effects of general anaesthesia like nausea and vomiting. But these are negligible in comparison to experience after laparotomy. Lately we have been doing diagnostic laparoscopy under local anaesthesia also.

We have been following all these patients for more than 2 years now and we can say that in majority of patients who have a negative outcome, the exclusion of significant disease not only gives peace of mind but also avoids further costly and uncomfortable investigations. Therefore it can be concluded that Laparoscopy is a very safe, quick, cost effective and useful diagnostic tool in undiagnosed lower abdominal pain. Laparoscopy shortens hospital stay and minimizes hospital visits, thus decreasing patients' expenses. Laparoscopy should be performed as an early investigative procedure in these patients because "Diagnosis should precede treatment whenever possible" as quoted by Hutchison's Clinical methods.

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