

The Role Of Diagnostic Laparoscopy In Undiagnosed Chronic Abdominal Pain- Prospective Study

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Abstract:

Patients With Chronic Abdominal Pain Are The Most Difficult To Diagnose And Treat. Potentially, It Can Be Unrewarding For Both Patients And Treating Physicians (1).

Thereby Affecting Patients Both Physically And Mentally. Chronic Abdominal Pain Is Associated With Poor Quality Of Life (2) And The Onset Of Depressive Symptoms (3). Most Patients In This Group Have Already Undergone Numerous Diagnostic Procedures, Including Upper And Lower Gastrointestinal Endoscopies, CT Scans, And Screening For Undetected Carcinomas, Apart From Routine Blood Investigations. This Is The Time When The Surgeon Is Approached When All Other Non-Invasive Investigations Have Failed To Reach A Satisfying Conclusion. Clearly, Diagnostic Laparoscopy Is An Important Intermediate Option Between Refusing To Explore A Patient's Abdomen And Performing Laparotomy (4). Diagnostic Laparoscopy With Advances In Optics Gives A Perfect Visual Of The Whole Abdomen And Further Gives Therapeutic Advantages As Well, Which Include Target Biopsies, Staging Of Cancers, And Various Gynaecological Pathologies. Laparoscopy Is As Much A Surgical Procedure As An Exploratory Laparotomy, Often Just As Informative, And A Skilled Laparoscopic Surgeon Affords A Better View Of The Entire Peritoneal Cavity Than A Usual Exploratory Laparotomy. Achieving A High Rate Of Positive Diagnosis From Laparoscopy Requires Much More Than Trained Hands; It Requires A Thorough Background In Surgery, Sound Clinical Knowledge, And A Perception Of Abdominal Pathologies. Most Importantly, It Avoids Unnecessary Negative Laparotomies In Many Cases. Moreover, Early Recovery And Ambulation Of Patients Help Them Get Back To Daily Chores And Are A Source Of Delight For Treating Doctors.

Keywords: *Diagnostic Laparoscopy; Chronic Abdominal Pain*

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I. INTRODUCTION:

Patients with chronic abdominal pain are the most difficult to diagnose and treat. Potentially, it can be unrewarding for both patients and treating physicians [4]. Thereby affecting patients both physically and mentally, chronic abdominal pain is associated with poor quality of life [2] and the onset of depressive symptoms [3].

Most patients in this group have already undergone numerous diagnostic procedures, including upper and lower gastrointestinal endoscopies, CT scans, and screening for undetected carcinomas, apart from routine blood investigations.

This is the time when the surgeon is approached when all other non-invasive investigations have failed to reach a satisfying conclusion. Clearly, diagnostic laparoscopy is an important intermediate option between refusing to explore a patient's abdomen and performing laparotomy [4]. Diagnostic laparoscopy with advances in optics gives a perfect visual of the whole abdomen and further gives therapeutic advantages as well, which include target biopsies, staging of cancers, and various gynaecological pathologies.

Laparoscopy is as much a surgical procedure as an exploratory laparotomy, often just as informative, and a skilled laparoscopic surgeon affords a better view of the entire peritoneal cavity than a usual exploratory laparotomy. Achieving a high rate of positive diagnosis from laparoscopy requires much more than trained hands; it requires a thorough background in surgery, sound clinical knowledge, and a perception of abdominal pathologies. Most importantly, it avoids unnecessary negative laparotomies in many cases. Moreover, early recovery and ambulation help patients get back to their daily lives and are a source of delight for treating doctors.

Aim of the study:

To evaluate the efficacy of diagnostic laparoscopy in recognising the aetiology of undiagnosed chronic abdominal pain.

Objectives of the study:

- To establish that laparoscopy can also be used as an effective therapeutic modality for patients with chronic abdominal pain.
- To study various causes of chronic abdominal pain using laparoscopy

II. METHODOLOGY:

Materials and Methods:

The material for this study was obtained from patients admitted to Annammal Hospital, Kanyakumari District. The study group comprises 50 patients with undiagnosed chronic abdominal pain for a duration of 3 months or more between July 2020 and January to December 2022.

A detailed clinical history and standard clinical evaluation, followed by routine blood investigations, were done. A proforma for the same was prepared, which included any previous h/o abdominal surgery, therapeutic intervention, an association of intraoperative findings with the histopathology report, complications, and the post-op pain relief period. Initial consent for the various procedures and imaging modalities was obtained.

Inclusion Criteria:

- All cases of undiagnosed (by conventional methods and investigations, i.e., history, clinical examination, blood or urine routine, USG, plain x-ray abdomen) chronic abdominal pain >3 months duration in both sexes
- All cases of undiagnosed chronic abdominal pain in patients older than 14 years of age.
- Cases of clinically diagnosed cases of chronic abdominal pain of >3 months duration not responding to treatment,
- All the cases with a history of previous abdominal surgery.

Exclusion Criteria:

- All the cases of undiagnosed chronic abdominal pain lasting 3 months in both sexes
- All cases of undiagnosed chronic abdominal pain in patients less than 14 years of age

Procedure:

All the surgeries were conducted under general anaesthesia. Ryle's tube was inserted, along with the bladder being catheterized for all the patients prior to anaesthesia.

Pneumoperitoneum was created by Hassan's technique. A 10 mm umbilical camera port and 2 lateral 5mm ports were inserted, depending on the area to be visualised, suspected pathology, and the presence of any previous abdominal surgery scars.

Surgical procedures and interventions (biopsy of suspicious lesions, adhesiolysis, appendectomy) were done on the basis of intraoperative findings and indications. All the ports were closed with absorbable suture material at the end of the procedure.

III. OBSERVATION:

Age distribution:

Our study of 50 patients with chronic pain abdomen showed a peak incidence of chronic pain abdomen in the 3rd decade. The youngest patient in our study was 45 years old, and the oldest was 69 years old. The mean age of presentation was 35 years.

Sex distribution:

Our study of 50 patients shows a female preponderance (66%) with chronic abdominal pain.

54% of patients in our study had a history of pain in the abdomen for a duration between 18 and 36 months.

About 37.14% of patients presented with pain in the periumbilical region, followed by diffuse pain in the abdomen in 34.8% of patients.

Around 31 patients (62.85%) in our study had undergone a previous surgery, compared to 19 (37.44%) of them without any history of abdominal surgeries. Most of the patients had a previous history of tubectomy with subsequent adhesions.

In our study of 50 patients, the most common finding was postoperative adhesions in 36% of patients. Most of the patients in this group were female and had a past history of

Recurrent appendicitis was our per-operative diagnosis in 14.28% of our patients. The appendices felt firm to palpate per operatively. An appendectomy was done in such patients. Subsequent histopathological examination confirmed our diagnosis in most of the cases. We did laparoscopic cholecystectomy for our patients, which was confirmed on HPE. Two patients were diagnosed with carcinoma per operation. One of them was a

carcinoma of the pancreas, and another had peritoneal deposits whose biopsy turned out to be an adenocarcinoma. A mesentery lymph node biopsy was done in one patient.

A diagnosis of tubercular stricture was made in one patient. This patient underwent resection and anastomosis of a long segment stricture and stricturoplasty for another short segment by the open method. Postoperatively, ATT was started, and the patient was followed up. HPE confirmed tuberculosis. In 4 (8.01%) of patients, peritoneal and omental nodules (5mm) were found, which came out to be tuberculous nodules on HPE.

Around 10% of cases, i.e., 5 patients in the current study, were diagnosed with gynaecological disease, including corpus luteal cyst, PCOD, endometriosis, and chronic ectopic. A gynaecological opinion was taken in all these cases.

| Age (in years) | No of patients | Percentage (%) |
|----------------|----------------|----------------|
| 15-30 | 23 | 46 |
| 31-40 | 10 | 20 |
| 41-50 | 13 | 26 |
| 51-60 | 3 | 6 |
| 61-70 | 1 | 2 |
| Total | 50 | 10 |

Table 1: Age distribution of patients presenting with chronic abdominal

| sex | No of patients | Percentage (%) |
|--------|----------------|----------------|
| Male | 17 | 34 |
| Female | 33 | 66 |

Table 2: Sex distribution of patients with chronic abdominal pain

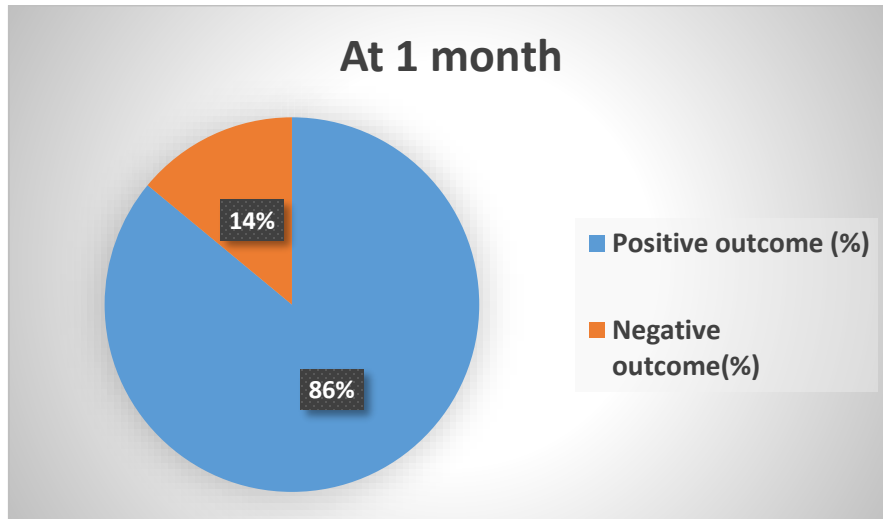


Fig1: Sex distribution

| Duration of pain (months) | No. of Cases | Percentage (%) |
|---------------------------|--------------|----------------|
| 3-12 | 17 | 34 |
| 12-18 | 04 | 8 |
| 18-36 | 26 | 52 |
| > 36 | 03 | 6 |

Table 3: Duration of pain before laparoscopy

| Region of the pain | No. of Cases | Percentage (%) |
|--------------------|--------------|----------------|
| Upper abdomen | 09 | 18 |
| Peri abdomen | 19 | 38 |
| Lower abdomen | 05 | 10 |
| Diffuse Abdomen | 17 | 34 |

Table 4: Location of Pain

| H/O surgery | No. of Cases | Percentage (%) |
|-------------|--------------|----------------|
| Present | 31 | 62 |
| Absent | 19 | 38 |

Table 5. History of previous abdominal surgeries

| Diagnosis | Procedure | No of patients | Percentage |
|------------------------------------|------------------|----------------|------------|
| Post-operative adhesions | Adhesiolysis | 18 | 36 |
| Normal study | No intervention | 09 | 18 |
| Recurrent appendicitis | Appendectomy | 07 | 14 |
| Chronic cholecystitis | Cholecystectomy | 03 | 06 |
| Carcinoma | Biopsy | 02 | 04 |
| Mesenteric- | Biopsy | 01 | 02 |
| Lymphadenopathy | | 04 | 08 |
| Tuberculosis (peritoneum, omentum) | Biopsy+ Cat1+ATT | 01 | 02 |

| | | | |
|---------------------------|--------------------------------|----|----|
| Tuberculosis (strictures) | Resection & Anastomosis ATT | 05 | 10 |
| Gynecological etiology | Normal Study | | |

Tab 6: Findings on Laparoscopy and intervention done.

Morbidity:

In most of our cases, there were no post-operative complications, except in three patients who developed surgical site infections, which were managed conservatively with antibiotics and alternate-day wound dressings. No mortality was encountered in our study.

Duration of hospital stay:

Post-operative hospital stays ranged from 4–11 days, with a mean duration of stay of 5.5 days.

Duration of the procedure:

The average time taken for an operative procedure was 67.4 minutes, and one patient required conversion to an open procedure (due to technical difficulties).

Follow up:

During the follow-up period, all the patients were reevaluated for pain. A review was done at one month and three months postoperatively. Subjective assessment of pain was done; positive outcomes (pain reduced or disappeared) and negative outcomes (persistence of pain or worsening) were noted. Five patients could not be followed up.

| Duration | Positive outcome (%) | Negative outcome(%) |
|------------|----------------------|---------------------|
| At 1 month | 86 | 14 |
| At 3 month | 70 | 30 |

Table 7: Outcome of the procedure

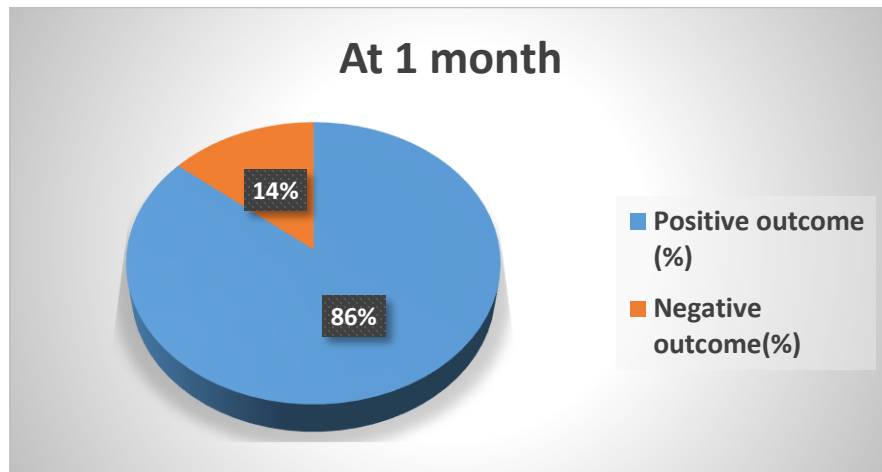


Fig 2: Outcome at 1 month



Fig 4: Intraoperative pictures

| Study | Average |
|-------------------------------|---------|
| Klingensmith et al (5) | 39 |
| Thanaponsathiran et al (12) | 27.5 |
| Gouda M EL ET AL (13) | 36 |
| Raymond et al (8) | 42 |
| Karan Sehgal (21) | 34 |
| Jayalal et al (Present study) | 35 |

Table 8: Comparison of average age incident

| Study | No of patients with prior surgery (%) |
|-------------------------------|---------------------------------------|
| Gouda M el Labanon et al (13) | 56 |
| Ashwin kumar baria (14) | 22 |
| Karan Sehgal (21) | 16 |
| Jayalal et al (Present study) | 62 |

Table 9: Comparison of past history of abdominal surgeries

| Study | No of patients with adhesions |
|-------------------------------|-------------------------------|
| Lavonius M et al (7) | 63 |
| Klingensmith et al (5) | 56 |
| Jayalal et al (Present study) | 36 |

Table 10: Comparison of patients with adhesions

| Study | Normal study (%) |
|-------------------------------------|------------------|
| SalkyBet al (6) | 24 |
| Kinnaresh Ashwin Kumar Baria'(14) | 10 |
| Vander Van et al(15) | 23 |
| Klingensmith et al (5) | 26 |
| Onders RP AND Mitteendrof et al (8) | 14 |
| Karan Sehgal (21) | 16 |
| Jayalal et al (Present study) | 18 |

Table 11: Comparison of patients with normal study at laparoscopy

| Study | No of Patients | Percentage |
|-----------------------------------|----------------|------------|
| Raymond P et al (8) | 70 | 85 |
| Karl Miller et al (10) | 59 | 89 |
| Klingensmith et al (05) | 34 | 65 |
| Scbrenk P et al'(17 | 92 | 87 |
| Kinriresh Ashwin Kumar Baria'(14) | 50 | 90 |
| Andeallo B et al (18) | 168 | 86.3 |
| Salky B et al (6) | 265 | 76 |
| Gouda Mm Labban et al (13) | 30 | 83 |
| Jayalal et al (Present study) | 30 | 82 |

Table 12:

| Study | No of Patients | Efficacy (%) Percentage (%) |
|-----------------------------------|----------------|------------------------------------|
| Klingensmith et al (5) | 34 | 73 |
| Vafa Shayani et al (19) | 18 | 77.8 |
| Miller K et al (10) | 59 | 90 |
| Kirmaresh Ashwin Kumar Barias(14) | 50 | 94 |
| Chao K et al (20) | 41 | 78 |
| Onders P et al (8) | 70 | 70 |
| Paajnen et al (11) | 35 | 70 |
| Karan Sehgal (21) | 50 | 70 |
| Jayalal et al (Present study) | 50 | 80 |

Table 13: Therapeutic efficacy

IV. Discussion:

The aim of our study was to study the efficacy of diagnostic laparoscopy as an investigative and therapeutic modality in the diagnosis and management of patients with chronic abdominal pain. For this purpose, we conducted a prospective study of 50 patients with a duration of pain greater than 3 months who were admitted to the surgical wards of Annammal Hospital.

Age and sex incidence:

There were 17 male and 53 female patients in the study. The age group of patients in this study ranged from 15 to 69 years, with the mean age being 35 years. The male-to-female ratio was 1:1.9.

In a study involving 34 patients by Klingensmith et al. [5], the majority were female (85%). The average age in this study was 39 years.

In the study by Thanaponsathron et al. [12], of 30 patients with chronic right lower quadrant pain, the average age was 27.5 years.

In a study by Raymond et al. [8] on the utility of laparoscopy in chronic abdominal pain involving 70 patients, the average age was 42 years.

In a study by Gouda M. El-Labban and Emad N. Hokkam [3] involving 30 patients, the average age of presentation was 36 years.

All the above studies show that females were commonly afflicted by chronic pain in the abdomen, and the average age of presentation was similar.

Pain duration:

In our study, the duration of pain ranged from 3 months to 3 years. In the study by Raymond et al. [8, 9] of 70 patients, the duration of pain ranged from 3 months to 5 years. In a study by Gouda M. El-Labban and Emad N. Hokkam [13], involving 30 patients, the duration of pain ranged from 3 months to 15 months.

Prior Surgery:

In our study of 50 patients, 31 had a previous history of abdominal surgery. In a study by Klingensmith et al. [5] involving 34 patients, most of the patients had a previous history of abdominal surgery.

In a study by Gouda M. El-Labban and Emad N. Hokkam [4–3] involving 30 patients, 7 had a previous history of abdominal surgery.

In a study by Kinnareash Ashwin Kumar Baria [44] involving 50 patients, four of them had a previous history of abdominal surgery.

Laparoscopic Diagnosis:

In our study, laparoscopy identified pathology in 41 patients (81.85%). No abnormality was found in the remaining nine patients (17.14%) who were just observed without any intervention.

Post-operative adhesion:

36% of patients in our study were found to have intestinal adhesions secondary to prior surgery, mostly tubectomy (in 8 patients). Some patients had histories of appendectomy (10), cholecystectomy (3), hysterectomy (5), and laparotomy for hollow viscous perforation. Adhesiolysis was done as a therapeutic procedure. Lavonius M. et al. [7] reported post-operative adhesions in 63% of cases in their study of 46 patients.

Normal study:

In a study by Klingensmith M. et al. [5], of 34 patients, 56% had post-operative adhesions. 17.14% of patients in our study did not have any pathology detected per operative visit. In a study by Salky B. A. et al. [6] involving 256 patients, normal laparoscopic findings were recorded in 24% of cases.

In a study by Kirlnaresh Ashwin Kumar Baria [14] involving 50 patients, 10% of them had no identifiable cause detected after laparoscopic examination.

In a study by Vander Van et al. [15], 23% of patients had an uncertain diagnosis at the end of the study. In a study by Klingensmith et al. [5] involving 54 patients, 26% had abnormal findings.

In a study by Onders RP and Mittendorf EA (8), involving 70 patients, 14.2% needed no surgical intervention.

Chronic Appendicitis:

7 (14%) of the patients in our study were diagnosed with recurrent appendicitis. HPE confirmed the diagnosis in six of them; one was reported as normal. Laparoscopy is a useful technique for the diagnosis and treatment of abdominal pain, even if the appendix is normal on inspection [16].

In a study by Onders RP and Mittendorf EA [8] involving 70 patients, appendiceal pathology was noted in 7,14% of cases. The present study's findings correlate with those of other published studies.

According to the study reported by Nar, A. S., and Bawa, A. (22), in their study of chronic abdominal pain in 120 patients, the results obtained are depicted in Figure
Figure: Results of Diagnostic Lapse in Chronic Pain Abdomen (Nar, A. S., Bawa, A., et al.)

Therapeutic efficacy of diagnostic laparoscopy:

The therapeutic efficacy of diagnostic laparoscopy in the present study matches that of other previous studies.

V. Conclusion:

Laparoscopy has effective diagnostic accuracy and therapeutic efficacy in the management of patients who present with chronic pain in the abdomen, especially in cases where conventional methods of investigation have failed to give an explanation.

Laparoscopy is a safe, quick, and effective modality of investigation for chronic abdominal pain. Diagnostic laparoscopy has high diagnostic and therapeutic efficacy. The ability to find a cause for abdominal pain or exclude a more major cause not only avoids any further investigations but also plays a significant role in satisfaction for the patient and relatives.

Laparoscopy has the added benefit of diagnostic and therapeutic intervention, which can be carried out in the same sitting, thereby avoiding the need for another hospitalisation or another exploration of the abdomen.

With the help of diagnostic laparoscopy, all unnecessary laparotomies can be avoided in patients with normal findings who don't need any surgical interventions.

Hence, diagnostic laparoscopy had an authoritative role in the management of patients with chronic abdominal pain.

VI. Summary:

- This study was done to assess the efficacy of diagnostic laparoscopy as an investigative modality in patients presenting with abdominal pain lasting more than 3 days.
- All 50 patients had undergone routine investigations, including ultrasonography and a CT scan, without finding any cause for the pain.
- 50 patients in the age group of 5–69 years were involved in the study, with the average age of presentation being 35 years. The average age of presentation being 35 years. 66% of the study population was female. 51% of patients had a duration of pain between 4 and 36 months, with 37% of them in the periumbilical region. 65% of patients had a previous history of abdominal surgery.

- The most common finding at laparoscopy in our study was post-operative adhesions (36%), followed by patients who had normal abdominal findings at laparoscopy (17.14%) and recurrent appendicitis (28%). One case required conversion to laparotomy. The average duration of surgery was 67.14 minutes.
- The average duration of a hospital stay is 5 days. There was no mortality in this study. Laparoscopy established the diagnosis in 82.85% of our patients.
- Therapeutic intervention had a positive outcome in 70% of patients in this study at the end of 3 months.

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