

Study on the Role of Diagnostic Laparoscopy in Undiagnosed Chronic Abdominal Pain- Prospective Study

J.A. Jayalal ^{1*}, Heeba Jayalal ², Jekin J. Sharon ³

¹ Professor of General surgery and consultant lap surgeon.

² Consultant Gynaecologist.

³ Residential medical officers.

*Corresponding Author: J.A. Jayalal, Professor of General surgery and consultant lap surgeon.

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Abstract:

Patients with chronic abdominal pain is the most difficult to diagnose and treat. Potentially it can be unrewarding for both patients and treating physicians.

Thereby affecting patients both physically and mentally. Chronic abdominal pain is associated with poor quality of life and the onset of depressive symptoms. 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. Diagnostic Laparoscopy with advances in optics gives the perfect visual of the whole abdomen and further gives therapeutic advantages as well, which include target biopsies, staging of cancers, and various gynecological 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 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 laparotomy 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: lip transfer; reconstructive surgery; autologous graft; adjuvant alternatives; liposuction

Introduction

Patients with chronic abdominal pain is 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, various gynecological 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 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 laparotomy in many cases. Moreover, early recovery and ambulation of patients help them get back to daily shores and is the source of delight for treating doctors.

Aim of the study:

To evaluate the efficacy of Diagnostic Laparoscopy in recognizing the etiology 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.

Materials and Methods

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

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 is done, an association of intraoperative findings with histopathology report, complications, and post-op pain relief period. Consent for the various procedures and imaging modalities was taken initially.

Inclusion Criteria:

- All the cases of undiagnosed (by conventional methods and investigations i.e., history, clinical examination, blood/ urine routine, USG, plain x-ray abdomen) chronic abdominal pain >3 months duration of both sexes.
- All cases of undiagnosed chronic abdominal pain in patients more 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 <3 months duration of 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 anesthesia. Ryle's tube was inserted, along with the bladder being catheterized for all the patients prior to anesthesia.

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

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

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 gave a history of pain abdomen of a duration between 18 to 36 months.

About 37.14% of patients presented with pain in the periumbilical region followed by diffuse pain abdomen reported 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% patients. Most of the patients in this group were females and had a past history of Recurrent appendicitis was us per operative diagnosis in 14.28% of our patients. The appendices felt firm to palpate per operatively. 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. 2 Patients were diagnosed with carcinoma per operatively. One of them being carcinoma pancreas and other had peritoneal deposits whose biopsy turned out to be adenocarcinoma. Mesenteric lymph node biopsy done in one patient. Diagnosis of tubercular stricture was made in one patient. This patient underwent resection and anastomosis of long segment stricture and stricturoplasty for another short segment by open method. Post operatively ATT was started, and 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 gynecological disease including corpus luteal cyst, PCOD, endometriosis, chronic ectopic. Gynecological 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	100

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.

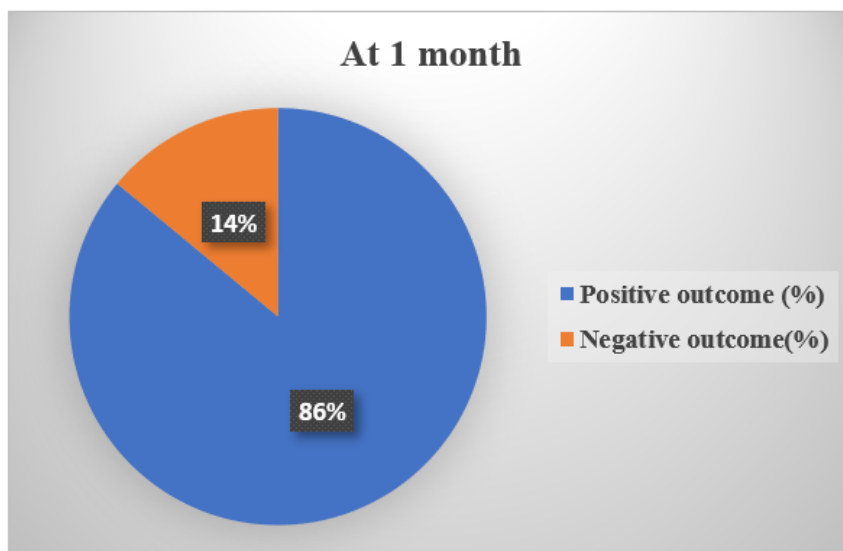


Figure 1: Sex distribution.

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	Appendicectomy	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		

Table 6: Findings on Laparoscopy and intervention done.

Morbidity:

In most of our cases there was no post-operative complications except in three patients who developed surgical site infections which was 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 procedure:

The average time taken for operative procedure was 67.14 minutes and one patient required conversion to open procedure (due to technical difficulties).

Follow up:

During the follow up period, all the patients were reevaluated for pain. Review was done at one month and three months post operatively. Subjective assessment of pain was done, positive outcome (pain reduced/disappeared) and negative outcomes (persistence of pain/worsened) were noted. 5 patients could not be followed up

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

Table 7: Outcome of the procedure.

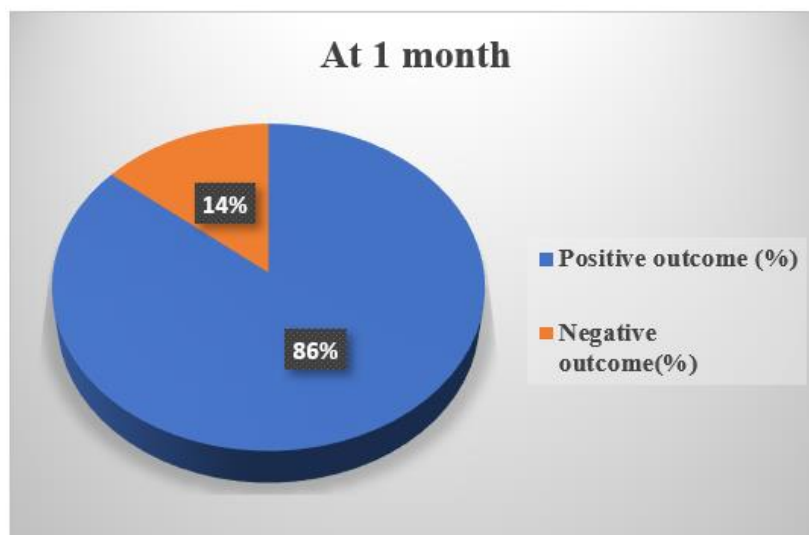


Figure 2: Outcome at 1 month.



Figure 3: 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 incidence.

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 (%)
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.**Discussion:**

The aim of our study was to study efficacy of diagnostic laparoscopy as an investigative, therapeutic modality in diagnosis and management of patients with chronic abdominal pain, for which prospective study of 50 patients with duration of pain more than 3 months who were admitted in surgical wards of our hospital at Kanyakumari Government medical college.

Age and sex incidence:

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

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

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

In study Raymond et al [8] for utility laparoscopy in chronic abdominal pain involving 70 patients, average age 42 years.

In study by Gouda M El-Labban and Emad N Hokkam [13] involving 30 patients, average age of presentation was 36 years.

All the above studies show that female sex was commonly afflicted by chronic pain abdomen and average age of presentation was similar.

Pain duration:

In our study duration of pain ranged from 3 months to 3 years. In study of Raymond et al [8,9] of 70 patients, duration of pain ranged from 3 months to 5 years. In 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 patients had previous history of abdominal surgery. In study of Klingensmith et al [5] involving 34 patients, most of the patients had previous history of abdominal surgery.

In study by Gouda M El-Labban and Emad N Hokkam [4,3] involving 30 patients, 37 had previous history of abdominal surgery.

In a study by Kinnareash Ashwin Kumar Baria [4] involving 50 patients, 44 of them had a previous history of abdominal surgery.

Laparoscopic Diagnosis:

In our study laparoscopy identified pathology in 41 patients (82.85 %). No abnormality was found in remaining 09 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 history of appendectomy (in 10), cholecystectomy (in 3), hysterectomy (in 5), and one patient history of laparotomy for hollow viscous perforation. Adhesiolysis was done as a therapeutic procedure. Lavonius M et al [7] in their study of 46 patients reported post-operative adhesions in 63% cases.

Normal study:

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

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

In study by Vander Van et al [15] a 23% patients had uncertain diagnosis at the end of study. In 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:

07 (14%) of patients in our study were diagnosed to have recurrent appendicitis. HPE confirmed diagnosis in 6 of them, 1 was reported as normal. Laparoscopy is a useful technique for 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% cases. The present study findings correlate with other published studies.

According to the study reported by Nar, A. S., Bawa, A [22], in their study of chronic abdominal pain of 120 patients the results obtained are depicted in Figure.

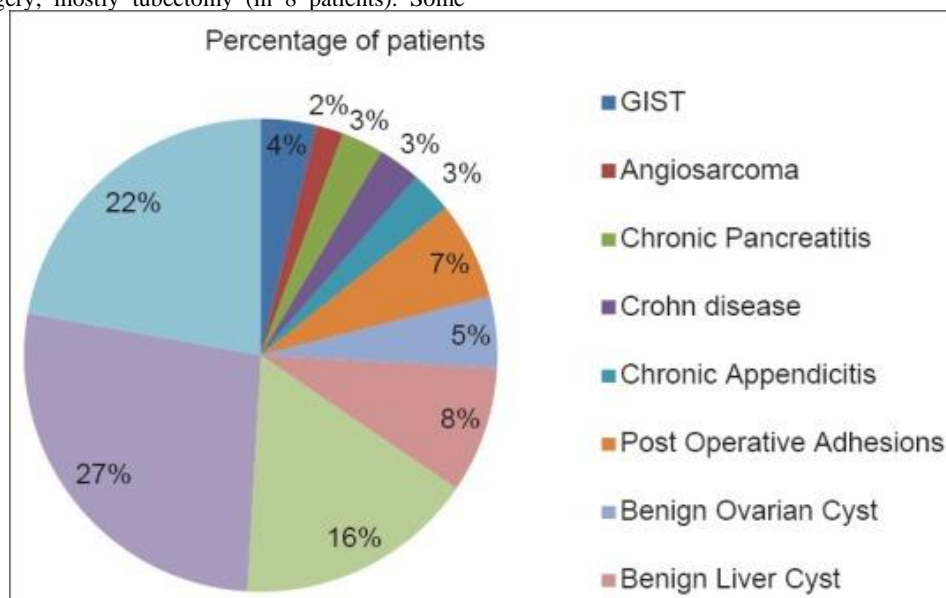


Figure 4: Results of Diagnostic lap in chronic pain abdomen.

Therapeutic efficacy of Diagnostic laparoscopy:

Therapeutic efficacy of diagnostic laparoscopy of the present study matches with other previous studies.

Conclusion:

Laparoscopy has an effective diagnostic accuracy and therapeutic efficacy in management of patients who presented with chronic pain

abdomen, especially in whom conventional methods of investigations have failed to give an explanation.

Laparoscopy is safe, quick, effective modality of investigation for chronic abdominal pain. Diagnostic laparoscopy has a high diagnostic and therapeutic efficacy. 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 an added benefit of diagnostic and therapeutic intervention, which can be carried out in same sitting, thereby avoiding the need for another hospitalization or another exploration of abdomen.

With the help of diagnostic laparoscopy, all the 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 management of patients with chronic abdominal pain.

Summary:

- This study was done to assess the efficacy of diagnostic laparoscopy as an investigative modality in patients presenting with abdominal pain of duration more than 3 months.
- All 50 patients had undergone routine investigations including ultrasonography, CT scan without yielding any cause for the pain.
- 50 patients in the age group of 5-69 years were involved in the study with average age of presentation being 35 years, 66 % of study population were female .51% of patients had duration of pain between 4 5-36 months and 37% of them being in the periumbilical region. 65% of patients had previous history of abdominal surgery.
- The most common finding at laparoscopy in our study was post-operative adhesions (36 %). It was followed by patients who had normal abdominal findings at laparoscopy (17.14%) and recurrent appendicitis in 14.28%. I case required conversion to laparotomy. Average duration of surgery was 67.14 minutes.
- The average duration of hospital stay being 5.5 days. There was no mortality in this stunt y. Laparoscopy established the diagnosis in 82.85% of our patients.
- Therapeutic intervention had positive outcome in 70 % of patients in this study at the end of 3 months.

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