E-ISSN: 2616-3470
P-ISSN: 2616-3462

www.surgeryscience.com
2022; 6(1): 214-218
Received: 06-11-2021
Accepted: 13-12-2021

Dr. Hiremath Veeresh Hampayya Swamy
Associate Professor, Department of General Surgery, Patnam Mahender Reddy Medical College, Chevella, Telangana, India

Corresponding Author:
Dr. Hiremath Veeresh Hampayya Swamy
Associate Professor, Department of General Surgery, Patnam Mahender Reddy Medical College, Chevella, Telangana, India

Diagnostic laparoscopy in chronic abdominal pain in uncertain diagnosis

Dr. Hiremath Veeresh Hampayya Swamy

DOI: https://doi.org/10.33545/surgery.2022.v6.i1d.853

Abstract
Background: The diagnosis of chronic abdominal discomfort is a difficult task in medicine. In individuals with undiagnosed persistent stomach discomfort, laparoscopy, a minimally invasive procedure, could be both diagnostic and therapeutic.
Aim: The goal of this study was to assess the utility of laparoscopy as an investigative tool in the diagnosis and treatment of patients with chronic abdominal discomfort.
Materials and Methods: 60 Patients with chronic abdominal discomfort had their demographics, clinical data, and medical and surgical histories recorded. The level of pain, as measured by a visual analogue scale (VAS) score, the duration of pain, the location of pain, and the nature of the pain were all noted. Routine and radiological examinations were also carried out. The patients underwent diagnostic laparoscopy, either open or closed, under general anaesthesia, following preoperative tests. The VAS score was used to assess discomfort after surgery.
Results: The majority of the patients (63.4 percent) had discomfort that lasted between 8 and 12 weeks, with a mean of 10.99 3.64 weeks. In 58.4 percent of the patients, fever was present. Adhesiolysis (30%) was the most common surgical procedure, followed by appendectomy (28.3 percent). The reduction in postoperative discomfort was statistically significant ($p< 0.001$).
Conclusion: In the treatment of individuals with chronic abdominal discomfort, laparoscopy is a powerful diagnostic tool that also provides great pain relief. Chronic abdominal discomfort can also be caused by adhesions and an irritated appendix. Validation of the findings, however, necessitates investigations with a large sample size.

Keywords: Chronic abdominal pain, appendectomy, Adhesiolysis

Introduction
Chronic abdominal pain is defined as a pain that lasts for more than 12 weeks and is intermittent or constant [1]. It is the most prevalent clinical presentation that has a physical and psychological impact on patients. In India, it is the fourth most common chronic pain syndrome in the general population, accounting for almost 13% of all surgical hospitalizations [2]. Chronic abdominal discomfort can be caused by a variety of causes, ranging from organic to functional. Intestinal adhesions, biliary reasons, and appendicular causes are the most prevalent organic problems, whereas functional disorders include irritable bowel disease, functional dyspepsia, and other motility abnormalities [3]. Despite thorough diagnostic workups, 40% of patients with chronic abdominal discomfort did not have a definitive diagnosis at the end of the study [4]. Many patients remain undetected even after thorough studies have ruled out prevalent illnesses, posing a substantial diagnostic problem for doctors [5]. Many instances remain inconclusive because biochemical, serological, and imaging tests such as ultrasound sonography (USG), computed tomography (CT), and magnetic resonance imaging (MRI) only provide indirect evidence of underlying illness. As a result, the surgeon faces a significant barrier in precisely diagnosing the patient and determining the best treatment option. With the introduction of diagnostic laparoscopy, a new tool for diagnosing and treating persistent abdominal pain became available. It is a minimally invasive treatment that has become more important in diagnosing chronic unexplained stomach pain in the modern day. It provides for direct peritoneal cavity imaging without the necessity for an open exploratory laparotomy. Many variables have contributed to the popularity of this therapy modality, including its excellent diagnostic yield, applicability and therapeutic care in both elective and emergency settings, shorter hospital stay, minimal morbidity, and low cost.

Although diagnostic laparoscopy is becoming more common in surgical practise, its utility in determining the diagnosis of nonspecific abdominal discomfort requires further research. There are few studies that show a definitive use for diagnostic laparoscopy in individuals with chronic abdominal pain. As a result, the current investigation was done to identify the aetiology of chronic abdominal pain, taking into account the burden of chronic abdominal pain and the advantages afforded by laparoscopy. It was also intended to evaluate the outcome in terms of pain reduction in such individuals after elective diagnostic laparoscopy at a later date.

Materials and Methods

The current one-year hospital-based cross-sectional study was done in the Department of General Surgery from January 2019 to December 2019. Prior to the start of the research, the Institutional Ethical Review Board gave their consent. The study comprised a total of 60 patients with undiagnosed persistent abdominal discomfort. Patients who met the selection criteria were given detailed information, including the diagnostic laparoscopy technique, and given written informed consent. The study comprised ≥18-year-old patients who had been experiencing chronic abdominal pain for at least 8 weeks and had been undiagnosed despite biochemical and other radiological procedures such as USG/CT/MRI. Patients with chronic abdominal discomfort, those who had stopped receiving treatment, pregnant women, and those who were not fit for general anaesthesia were exempted. Demographic information (such as age and gender) was recorded. Patients were questioned about their medical and surgical histories as well as their current problems. Fever, diarrhoea, constipation, burning, and micturition were among the symptoms noted. The patients underwent a clinical examination, during which they were asked questions about the degree of their pain, as measured by a visual analogue scale (VAS) score, as well as the length, location, and nature of their pain. These findings were documented on a proforma that had been prepared and evaluated in advance. Hemoglobin, total leukocyte counts, direct count, random blood sugar, platelet count, liver function test, urine routine and microscopy, serum creatinine, and radiographic examinations like USG, CT, and MRI were all done. The selected patients were submitted to diagnostic laparoscopy, either by open or closed method, by a single surgeon, under general anaesthesia, following the evaluation of preoperative investigations and fitness for anaesthesia. Prior to surgery, patients were maintained nil by mouth for 12 hours. The first port was placed at the umbilical site using an open method. Initial port installation was done via open technique at Palmer's site in subjects with scars and a history of surgery. As needed, additional ports were added. In each case, the abdominal cavity was explored to the fullest degree possible. Adhesiolysis, appendectomy, peritoneal biopsy, lymph node biopsy, or aspiration of any peritoneal fluid were all performed at the operating surgeon's discretion. The uterus, ovary, and uterine adnexa in females were serially viewed and investigated, as were the rectum and sigmoid colon, ileocecal area, cecum, appendix, ascending colon, transverse colon, stomach, duodenum, gallbladder, liver, spleen, and descending colon. The patient was subsequently placed in a reverse Trendelenburg posture for an upper abdominal examination. The entire length of the small bowel could be walked over for direct vision and examination using bowel grabbing forceps. Based on the results of the biopsy examination, the definitive diagnosis was made. Patients were treated appropriately after the surgery based on the findings of the laparoscopy. All of the patients had the same general anaesthetic procedure, and they were monitored for pain. The pain was graded on a scale of 0 to 10 on the VAS scale. During the preoperative visit, the VAS was described to the patient, with zero representing no pain and ten representing the most severe discomfort. Pain was assessed at the time of enrolment and at postoperative follow-ups on days 15, 30, 45, and 60. The collected information was coded and entered into a Microsoft Excel spreadsheet. Rates, ratios, and percentages were used to represent categorical data. The mean and standard deviation of continuous data were calculated. The one-way ANOVA test was used to compare mean pain scores at different follow-ups. Statistical significance was defined as $p \leq 0.05$ at a 95% confidence range.

Results

Table 1: Demographic details.

Variables	Number (%)
Sex	
Male	20 (33.3)
Female	40 (66.7)
Age (Years)	
19-30	19 (31.7)
31-40	16 (26.7)
41-50	15 (25)
51-60	4 (6.6)
61-70	6 (10)
Marital Status	
Single	10 (16.6)
Married	50 (83.4)
Education	
Studying	12 (20)
Primary	3 (5)
Secondary	11 (18.4)
Graduate	33 (55)
Postgraduate	1 (1.6)
Clinical Presentation	
Fever	35 (58.4)
Diarrhoea	10 (16.6)
Constipation	11 (18.4)
Burning micturition	2 (3.3)
Others	2 (3.3)

Table 1 shows that The patients' average age was 38.79 ± 15.19 years, with a significant female preponderance (66.7 percent). The majority of the patients (31.7%) were between the ages of 19 and 30 years. The majority of the patients were married (83.4%) and had completed their education (55 percent). Fever was the most common clinical symptom in the majority of the individuals (58.4 percent).

Table 2: Demographic details.

Variables	Number (%)
History	
Previous LSCS	3 (5)
Hypertension	2 (3.4)
Hysterectomy	2 (3.4)

LSCS & tubectomy	2 (3.3)
Tubectomy	2 (3.3)
Laparoscopic adhesiolysis for intestinal obstruction	2 (3.3)
Open appendectomy	2 (3.3)
Right hemicolectomy	2 (3.3)
Tuberculosis	1 (1.7)
Not significant	42 (70)
Abdominal Examination	
Lower abdominal tenderness	26 (43.4)
Generalized tenderness	25 (41.6)
Suprapubic tenderness	3 (5)
Upper abdominal tenderness	3 (5)
Umbilical tenderness	3 (5)

Table 2 shows that 43.4 percent of patients reported lower-abdominal tenderness, whereas 41.6 percent reported generalised tenderness.

Table 3: Distribution of chronic abdominal pain based on pain characteristics.

Characteristics	Number (%)
Duration (Weeks)	
8-12	38 (63.4)
13-16	19 (31.6)
>16	3 (5)
Site	
Generalised	30 (50)
Lower abdomen	24 (40)
Upper abdomen	3 (5)
Around umbilicus	3 (5)
Pain types	
Moderate	2 (3.4)
Progressive	37 (61.6)
Intermediate	11 (18.4)
Dragging	6 (10)
Pricking	1 (1.6)
Severe	3 (5)
Severity	
Mild	2 (3.4)
Intermediate	20 (33.3)
Moderate	16 (26.6)
Severe	14 (23.3)
Progressive	8 (13.4)

Table 3 shows that the majority of the patients (63.4 percent) experienced pain for 8 to 12 weeks. The mean duration of pain observed in patients was 10.99 ± 3.64 weeks. The majority of patients complained of widespread (50%) moderate (33.3%), and increasing discomfort (61.6 percent).

Table 4: Distribution based on clinical and biochemical profile of patients.

Variables	Number (%)
Pain Scores at enrolment (VAS scores)	7.99±0.57
Weight (Kg)	63.65±7.24
Pulse rate (per min)	77.13±5.97
Systolic blood pressure (mm Hg)	120.54±11.53
Diastolic blood pressure (mm Hg)	78.42±7.04
Respiratory rate (per min)	18.78±8.74
Temperature (ºC)	98.32±0.83
Hemoglobin (g%)	13.99±4.39
TLC (mm^3)	8885.41±3216
Platelet count (Lakhs)	2.69±0.22
RBS (mg/dL)	103.93±14.67
Blood Urea (mg/dL)	25.48±67.98
Serum Creatinine (mg/dL)	0.99±0.63

Table 4 shows the clinical and biochemical profile of patients. Blood urea levels (25.48±67.98 mg/dL) of the patients with chronic abdominal pain, while the remaining clinical and biochemical parameters were within the standard limits.

Table 5: Distribution based on USG, CT scan, surgical findings and surgery type.

Variables	Number (%)
USG Findings	
Normal	43 (71.6)
Mild hepatosplenomegaly, free fluid	2 (3.4)
Mild splenomegaly, mild ascites, left minimal pleural effusion	2 (3.4)
Minimum bladder distended, no obvious collection in umbilical region	2 (3.4)
Minimal free fluid in Douglas pouch	1 (1.6)
Not done	10 (16.6)
CT scan findings	
Normal	14 (23.4)
Not done	46 (76.6)
Surgical Findings	
Adhesions	18 (30)
Inflamed appendix	19 (31.7)
Tubercular lymph node	6 (10)
Adhesions with inflamed appendix	5 (8.4)
Inflamed appendix with mobile cecum	3(5)
Left sided ovarian cyst	2 (3.5)
Liver abscess	1(1.7)
Gut malrotation	1(1.7)

Omental adhere to right fimbrial end, high cecum, inflamed appendix	1(1.6)
Right sided ovarian cyst	1(1.6)
Right sided ovarian hemorrhagic cyst	1(1.6)
Umbilicus sinus tract	1(1.6)
Volvulus of left hepatic flexure	1(1.6)
Surgery Type	
Adhesiolysis	18 (30)
Appendectomy	17 (28.3)
Adhesiolysis with Appendectomy	7 (11.7)
Lymph node biopsy	7 (11.7)
Ovarian cystectomy	5 (8.4)
Appendectomy with cecopexy	2 (3.5)
Excision of Ladd's band with ileotransverse colon anastomosis	1(1.6)
Laparoscopic colopexy	1(1.6)
Abscess drainage	1(1.6)
Sinus tract excision	1(1.6)

Table 5 shows USG, CT scans, surgical results, and the type of surgery performed in patients. In 71.6 percent and 23.4 percent of the patients, respectively, the USG and CT findings were normal. Inflammation of the appendix was the most prevalent surgical finding (31.7 percent), followed by adhesions (30 percent). Adhesiolysis (30%) was the most prevalent surgical treatment, followed by appendectomy (28.3 percent).

Table 6: Distribution based on postoperative pain scores.

Visual analog scale scores	Intervals (Number (%))			
	15 days	30 days	45 days	60 days
No pain (0)	10 (16.7)	34(56.6)	48 (80)	53 (88.4)
Mild (0-3)	21 (35)	19(31.7)	9 (15)	6 (10)
Moderate (4-6)	28 (46.7)	7(11.7)	3 (5)	1(1.6)
Severe (>6)	1 (1.6)	0	0	0

Table 6 shows that on day 15, 46.7 percent of patients had moderate pain, whereas 16.7% reported no discomfort. On days 30, 45, and 60, 56.6 percent, 80 percent, and 88.4 percent of patients had no pain. This was a statistically significant reduction ($p< 0.001$).

Discussion

Chronic abdominal pain is a persistent issue that has to be investigated and treated right away. As a result, the goal of the study was to see how effective laparoscopy is at diagnosing and treating patients with chronic abdomonal discomfort. In the present study, male to female ratio was 1:2 which suggested that chronic abdominal pain was more prevalent in females when compared to males which further explaines that it might be due to number of gynaecological procedures during pregnancies, such as caesarean sections, hysterectomy and tubectomy. Similar patterns of sex distribution was observed in Naniwadekar RG *et al.* [2], Kumar A *et al.* [4], Vijay K *et al.* [7] and Anil P Bellad *et al.* [8] studies. The chronic abdominal pain occurrence was profoundly observed in younger age as 31.7% was observed in patients with age group between 19 to 30 years of age. Similar results were observed in Chaphekar A *et al.* [9], Vijay K *et al.* [7] and Anil P Bellad *et al.* [8] studies. The most common symptoms on abdominal examination were lower abdomen (localised) and widespread soreness. When compared to localised tenderness, generalised tenderness presents surgeons with a bigger diagnostic challenge which was also observed in Macaluso CR *et al*[10] study. The patients' vital signs and biochemical profile were both normal. Patients' USG and CT scans did not reveal a diagnosis of chronic abdominal pain, but laparoscopic investigations revealed that the majority of them had adhesions and an infected appendix. Adhesions impair the movement and distensibility of abdominal organs, particularly the intestine, resulting in chronic stomach pain which was also observed in Alam MS study [11]. Abdominal adhesions were also identified as a common abdominal disease in studies undertaken by Salky *et al.* [12] and Sachin *et al.* [13] studies. In study conducted by Naniwadekar RG *et al.* [2], it was observed that abdominal Koch's was the most common cause of chronic abdominal pain excluding gynaecological cases which was contrast to the present study. In the present study, adhesiolysis was the most common surgical procedure followed by appendectomy. Similar results were observed in Sayed *et al.* study, the number of patients who underwent adhesiolysis were 43.6%. After a follow up period of 6 months, in Husain *et al.* [14] study, patients who had chronic abdominal pain had 19% and 17.3% cure rate with appendectomy and adhesiolysis respectively. In more than 50% patients, 19 laparoscopic adhesiolysis resulted in a positive outcome in a study conducted by El-labban *et al.* [15]. Overall pain improvement was reported in 88.4 percent of individuals with chronic abdominal pain after 60 days in this study. After two months of laparoscopy, 86 percent of patients in a study by Kumar *et al.* [4]. Reported no pain or less pain. In the present study, excellent pain reduction was reported in the challenging patient group (i.e., patients with severe chronic pain for 10 weeks without significant biological and radiological studies). From day 15 to day 60, the mean VAS score also decreased. Only six individuals had mild pain on the 60th day, and one patient reported serious pain. Cataplexy, appendectomy, lymph node biopsy, ovarian cystectomy, and sinus tract excision were performed on patients with minor pain. The patient with moderate pain, on the other hand, had Ladd's band removed and an ileotransverse colon anastomosis performed. In general, laparoscopy is a safe, rapid, and effective method of diagnosing chronic stomach pain. The ability to pinpoint or rule out a primary cause of stomach pain not only saves time and money, but it also helps patients feel less fearful. Laparoscopy not only determines the diagnosis, but it also has the benefit of therapeutic action, which can usually be done in the same sitting, avoiding the need for another hospitalisation or abdominal investigation. The research also shows that diagnostic laparoscopy benefits surgeons in directly visualising the contents of the abdominal cavity better than any other investigational modality. Without any biological or radiological backdrop, it is safe to recognise anomalous findings. This can also enhance the outcome for the majority of patients in the challenging category by giving a suggestion for diagnosis confirmation. Despite its many advantages, the effectiveness of laparoscopy is limited by the surgeons' expertise, training, and synchronisation.

Conclusion

Overall, laparoscopy provides a definitive diagnosis and aids in therapeutic intervention in individuals with unidentified persistent abdominal discomfort. Chronic abdominal pain is caused by adhesions and an inflamed appendix. Many of these patients get pain relief, making laparoscopy a valuable diagnostic tool in the treatment of persistent abdominal discomfort. However, because this is a single-center study with a small sample size, larger sample size are needed to confirm the current findings.

References

1. Parthasarathy A. Partha's fundamentals of Pediatrics. JP Medical Ltd. 2013.
2. Naniwadekar RG, Kabra MV, *et al*. Role of diagnostic laparoscopy in chronic ab dominal pain. J Evol Med Dent Sci. 2016;5(17):859-863.
3. Tulaskar N, Nichkaode P, *et al*. Evaluation of role of laparoscopy in chronic abdominal pain. Int J Biol Med Res 2013;4(2):3230-3233.
4. Kumar A, Sar war MY, *et al*. Role of diagnostic laparoscopy in nonspecific chronic abdominal pain: experience of 100 cases. J Evol Med Dent Sci. 2013;48(2):9361-9366. DOI: 10.14260/jemds/1622.
5. Galili O, Shaoul R, *et al*. Treatment of chronic recurrent abdominal pain: laparoscopy or hypnosis? J Laparoendosc Adv Surg Tech A. 2009;19(1):93-96.
6. Husain M, Sachan PK, *et al*. Role of diagnostic laparoscopy in chronic and recurrent abdominal pain. Trop Gastroenterol. 2014;34(3):170-173. DOI: 10.7869/tg.122.
7. Vijay K, Mohan A. Laparoscopy as a diagnostic tool in chronic abdominal pain. Med Pulse – Int. Med J. 2017;4:249-253.
8. Anil P Bellad, Amar A Murgod. Role of Diagnostic Laparoscopy in Chronic Abdominal Pain with Uncertain Diagnosis: A 1-year Cross-sectional Study; World Journal of Laparoscopic Surgery, 2019, 12(1).
9. Chaphekar A, Vankipuram S, et al. Does Laparoscopy Have a role in Chronic Abdominal Pain? Int J Contemp Med Res. 2016;3:2582-2585.
10. Macaluso CR, McNamara RM. Evaluation and management of acute abdominal pain in the emergency department. Int J Gen Med. 2012;5:789. DOI: 10.2147/IJGM.S25936.
11. Alam MS, Rahman MM, *et al*. Role of Diagnostic Laparoscopy in Unexplained Chronic Abdominal Pain. J Armed Forces Med College. 2015;10:9-14.
12. Salk YB, Edye M. The role of laparoscopy in the diagnosis and treatment of abdominal pain syndromes. Surg Endosc. 1998;12:911-914. DOI: 10.1007/s004649900744.
13. Sachin J, Ashish B. Study of role of laparoscopy in chronic abdomen. Int J Biomed Adv Res. 2015;6:518-521.
14. Husain M, Sachan PK, *et al*. Role of diagnostic laparoscopy in chronic and recurrent abdominal pain. Trop Gastroenterol 2014;34(3):170-173. DOI: 10.7869/tg.122.
15. El - labban GM, Hokkam EN. The efficacy of laparos copy in the diagnosis and management of chronic abdominal pain. Jminim Access Surg. 2010;6:95. DOI: 10.4103/0972-9941.72594.