

## Study to evaluate the role and efficacy of diagnostic laparoscopy in chronic abdominal pain

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**Abstract**

**Background:** Chronic idiopathic pain syndromes are among the most difficult and time-consuming disorders to manage, and they affect people of all ages. Despite the fact that these individuals have undergone several diagnostic tests, their pain continues to pose a challenge to all currently available diagnostic and therapy options. **Aims and Objectives:** In this prospective trial, we hope to determine the diagnostic and therapeutic efficacy of laparoscopy in the therapy of such patients. **Materials and methods:** In this study, 40 individuals with persistent discomfort in the abdomen were enrolled and evaluated. Every one of these patients was experiencing pain that was either of unknown origin or that was not responding to the treatment prescribed following a clinical assessment and had lasted for more than three months. Patients less than 15 years of age and those suffering from pain of shorter duration were excluded from the study. Patients underwent diagnostic laparoscopy as well as the operation in all cases. We tallied and assessed the outcomes of our study. **Results:** Females were found to be more impacted by this illness, with the periumbilical region being the most commonly reported site of pain. In 34 patients (85.0 percent), a conclusive diagnosis was made during surgery, while in the remaining six (15.0 percent), no evident pathology was discovered. Among the most prevalent findings in our study were recurrent appendicitis (62.5 percent), which was followed by post-operative adhesions (15.0 percent), gall stones (7.5 percent), tuboovarian disease (5.0 percent), and abdominal tuberculosis (5.0 percent). Pain assessments performed at one month and three month follow-ups revealed that 87.7 percent of patients had experienced pain alleviation, and 84.5 percent had experienced pain relief at three months. **Conclusion:** Chronic abdominal discomfort is caused by a variety of factors, the most common of which is recurrent appendicitis. In such patients, diagnostic laparoscopy is a safe and effective method for both the diagnosis and therapeutic therapy.

**Keywords:** Appendicitis, Chronic abdominal pain, Laparoscopy, periumbilical region, therapeutic management

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**Introduction**

Chronic abdominal pain is a common complaint seen in both general practice and hospitals. Despite the fact that patients with this type of pain may have undergone numerous diagnostic procedures, including surgery, their pain continues to defy all known diagnostic and treatment methods. Chronic abdominal pain patients are among the most difficult to manage [1,2]. It has the potential to be unsatisfying for both the patient and the treating physician. Chronic abdominal pain is a tough complaint. It causes obvious physical and psychological misery and incapacity. Chronic abdominal pain is linked to a lower quality of life. Studies with large community samples or hospital populations suggest chronic abdominal pain is a widespread condition. After all, at the end of their diagnostic workup, more than 40% of patients who presented with chronic abdominal pain had no specific etiological diagnosis [3,4,5].

When the limitations of practical noninvasive testing in an individual patient's ailment are reached, which is likely to occur without the extensive testing conducted today, the surgeon is frequently consulted. Naturally, there is a considerable likelihood of a non-therapeutic abdominal investigation. Clearly, diagnostic laparoscopy is an important intermediate alternative between declining to examine the abdomen of a patient and doing a laparotomy [6,7].

As opposed to laparoscopic surgery, diagnostic laparoscopy can be performed under direct eyesight with simple equipment and does not

necessitate the use of a video camera or the electronic gadgetry that is connected with the procedure. Because of advancements in optics, laparoscopy now allows for a perfect visual examination of the peritoneal cavity, as well as the possibility of histological diagnosis of a target biopsy while the patient is under anaesthesia. Laparoscopy is just as much of a surgical operation as an exploratory laparotomy, and it is often just as enlightening. It also provides a greater view of the entire peritoneal cavity than the traditional exploratory laparotomy, which is beneficial to the skilled surgeon. To get a high rate of positive diagnosis from laparoscopy, it is necessary to have a thorough foundation in surgery, excellent clinical acumen, as well as knowledge and awareness of abdominal disease, in addition to using the correct method [8].

As Hutchinson remarked more than seven decades ago, "The most important element in the treatment of chronic abdominal is to catch the patient early." As soon as she steps onto the steep slope that leads to a series of procedures, she will be undone [9]. In many instances, it prevents the need for an unneeded or negative laparotomy. The speedy recovery and return to regular activity that occur following diagnostic laparoscopic surgery serve as an additional incentive for the surgeon to employ more laparoscopic methods in his or her practices.

**Aim & Objective**

To study the efficacy of diagnostic laparoscopy in identifying the etiology of undiagnosed chronic abdominal pain.

**Materials And Methods**

This study was conducted in the surgical wards of Kamineni Institute of Medical Sciences/Hospital, Narketpally.

The study group consisted of 40 patients admitted to the surgical

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wards of KIMS with pain abdomen of 3 months duration or more between August 2020 to September 2021. A detailed history was taken from each of the patient as per the proforma designed before the commencement of the study. The clinical examination findings were also recorded in the proforma. The results were then tabulated.

The recorded data included particulars of the patient, duration of illness, site of abdominal pain, other associated symptoms such as vomiting or fever or white discharge per vagina, past history of surgical explorations, co morbid conditions, investigations. Subsequently the intraoperative findings, therapeutic/diagnostic intervention done, correlation of the intra operative findings with the histopathology report, complications during the intra and post operative period and the relief from the pain were recorded and analysed.

As apart of the work up of a patient the follow ing investigations were done routinely:

- Haemoglobin estimation
- Bleeding time
- Clotting time
- Random blood sugar
- Total leucocyte count and differential count
- Serum electrolytes
- Blood urea
- Serum creatinine
- Urine for albumin, sugar and microscopic examination
- Haemoglobin estimation
- Bleeding time
- Clotting time
- Random blood sugar
- Total leucocyte count and differential count
- Serum electrolytes

- Electrocardiogram
- Ultrasonogram abdomen and pelvis
- Chest X Ray.

The other investigations listed below were done as and when indicated

**Blood**

- Erythrocyte Sedimentation Rate
- Fasting blood sugar and post prandial blood sugar

**Imaging**

- Erect X Ray abdomen

**Inclusion Criteria**

- All cases of undiagnosed (by conventional methods and investigations such as detailed history, clinical examination, blood counts, urine examination, USG abdomen, Plain x ray abdomen) chronic abdominal pain >3 months duration of both sex.
- All cases of undiagnosed chronic abdominal pain in patients >15 years of age.
- Cases of clinically diagnosed chronic abdominal pain of >3 months duration not responding to the treatment given.

**Exclusion Criteria**

- All cases of undiagnosed chronic abdominal pain <3 months duration of both sex.
- All cases of undiagnosed chronic abdominal pain in patients <15 years of age.
- Oncological Patients, Pregnant Women, Women who had recently given birth, Patients with coagulation defects. Patients with acute myocardial infarction.

**Results**

**Age distribution**

**Table 1: Age distribution of patients presenting with chronic pain abdomen.**

Age in years	Number of Patients	Percentage (%)
15-30	14	35 %
31-40	15	37.5%
41-50	6	15 %
51-60	3	7.5 %
61-70	2	5 %

Pain abdomen in the third decade. The youngest patient in our study was 18 years and the oldest patient being 62 years. The mean age of presentation was 33 years.

**Sex Distribution**

**Table 2: Sex Distribution Of Patients Presenting With Chronic Pain Abdomen**

Sex	Number of Cases	Percentage
Male	15	37.5 %
Female	25	67.5%

Our study of 40 patients showed a female preponderance to chronic pain abdomen (67.5%).

**Table no3: Duration of pain before laparoscopy**

Duration of pain (months)	Number of patients	Percentage (%)
3-12	14	35 %
12-18	7	14.25 %
18-36	16	40 %
>36	5	12.5 %

44% of the patients in our study gave a history of pain abdomen of duration between 18 to 36 months.

**Table no4: Location of Pain**

Region of Pain	No. of patients	Percentage (%)
Upper abdomen	4	12.5%
Lower abdomen	4	12.5%
Periumbilical	14	43.75%
Diffuse abdomen	10	31.25%

Most of the patients in our study of 14 patients presented with periumbilical region pain. It was followed closely by diffuse pain abdomen.

**TableNo5: History of Previous Abdominal Surgeries**

History of surgery	No.of cases	Percentage (%)
Present	6	15 %
Absent	34	85 %

Around 34 (85 %) of patients in our study has no history of previous surgery compared to 6(15 %) of them with history of previous abdominal surgeries.

**Table No.6: Findings at laparoscopy and intervention done**

Diagnosis	Procedure	No. of Patients	Percentage(%)
Recurrent appendicitis	Appendectomy	22	55 %
Post operative adhesions	Adhesiolysis	6	15 %
Chronic cholecystitis	Cholecystectomy	3	7.5 %
Ovarian Cyst	Aspiration	2	5 %
Tuberculosis	CAT I ATT	2	5 %
Normal study	Observation	5	12.5%

In our study of 40 patients, the most common finding was recurrent appendicitis in 55.0% of patients. Most of the patients in this group were females. Recurrent appendectomy was done in all these patients. The next most common finding at laparoscopy in our study was a post operative adhesions and normal study (15.0%) each. Adhesiolysis was done in all these patients with adhesions and in patients with normal study follow up observation was done. Recurrent appendicitis was our per operative diagnosis in most 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 these cases. We did laparoscopic cholecystectomy for 3 of our patients. HPE confirmed our findings in this group of patients. One patient was found to have abdominal Tuberculosis for which Cat 2 ATT was started. 5 out of 40 patients in our study no significant abnormality was found. One patient was found to have hemorrhagic ovarian cyst for which aspiration was done.

#### Morbidity

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

managed conservatively by appropriate antibiotic cover and alternate day wound dressing. No mortality was encountered in our study group.

#### Duration of hospital stay

Post operative hospital stay ranged from 6 to 8 days with a mean duration of stay of 7 days.

#### Duration of procedure

The average length of the operative time was 42.6 minutes and no patients required conversion to an open method.

#### Followup

During the followup period, all patients were evaluated for pain. The patients were reviewed at one month and three months post operatively. Subjective assessment of pain was done during the followup and positive outcome (less pain or disappearance of pain) was noted and negative outcome (persistence of pain or worsening pain) was also noted.

**TableNo7: Post Operative Pain Relief**

Duration(in months)	Positive Outcome (%)	Negative Outcome (%)
At 1	87.7	12.3
At 3	84.5	15.5

Chronic abdominal pain is a common problem dealt not only by the general surgeon but by all practicing physicians. Even after extensive non-invasive work up of such patients, the exact cause of pain abdomen is seldom known.

#### Discussion

The aim of our study is to study the efficacy of diagnostic laparoscopy as an investigative and therapeutic modality in the diagnosis and management of patients with chronic pain abdomen. Diagnostic laparoscopy makes it possible for the surgeon to directly visualize the contents of the abdominal cavity better than any other investigative modality. The study confirmed that in this difficult patient group, laparoscopy could safely identify abnormal findings and can improve the outcome in a majority of the cases.

In this prospective study 40 patients were considered who were admitted in the surgical wards of Kamineni Institute of Medical Sciences/ Hospital Institute between August 2020 and September 2021. All patients had pain abdomen lasting for more than a period of three months.

#### Age and Sex Incidence

There were 15 males and 25 female patients in the study. The age group of patients in this study ranged from 15 to 60 years with the average age being 33 years.

Male: Female ratio was 3:5

In a study involving 34 patients by Klingensmith et al [8], the majority were women (85%). The average age in their study was 39 years (Range 21-75 years).

In a study by Thanaponsathron et al [9] of 30 patients with chronic right lower quadrant pain, the average age was 27.5 years.

In a study by Raymond et al [10] for utility of laparoscopy in chronic abdominal pain involving 70 patients, the average age was 42 years.

In a study by Gouda MEI-Labbanand Emad NHokkam [11] involving 30 patients, the average age of presentation was 36 years.

All the above studies show that the female sex was more commonly afflicted by chronic pain abdomen and the average age at presentation in our study is comparable with the aforementioned studies.

#### Pain Duration

In our study, the duration of pain ranged between 3 months to 3 years.

In a study by Raymond et al [10] of 70 patients, the duration of pain ranged from 3 months to 5 years.

In a study by Gouda MEI-Labbanand Emad NHokkam [11] involving 30 patients, the duration of pain ranged from 3 to 15 months.

#### Prior Surgery

In our study of 40 patients, 6 patients had previous history of abdominal surgery. In a study by Klingensmith et al [12] involving 34 patients, most of the patients had previous history of abdominal surgery.

In a study by Gouda MEI-Labbanand Emad NHokkam 40 involving 30 patients, 17 had a previous history of abdominal surgery.

In a study by Kinnareash Ashwin Kumar Baria [23] involving

50 patients, 11 of them had a past history of abdominal surgery.

#### Laparoscopic Diagnosis

In our study comprising 40 patients, laparoscopy identified pathology in 34 patients (85.0%).

No abnormality was found in the remaining 6 patients (15%) who were just observed without any intervention.

12.50% of the patients in our series were found to have intestinal adhesions secondary to a prior abdominal surgery, mostly tubectomy (in 5 patients).

Lavonius Metal<sup>14</sup> in their study of laparoscopy for chronic abdominal pain in 46 patients reported post operative adhesions in 63% of cases.

In a study by Klingensmith et al [8] involving 34 patients, 56% of the munder went adhesiolysis.

In a study by VafaShayani et al [15] involving 18 cases, laparoscopic adhesiolysis resulted in a 77.8% cure rate from chronic abdominal pain.

In a study by Dunker Setal [16] laparoscopic adhesiolysis resulted in a positive outcome in more than 50% of patients.

12.50% of patients in our study did not have any pathology detected peroperatively.

In a study by Salky B A et al [17] involving 265 patients, normal laparoscopic findings were recorded in 24%.

In a study by Kinnareash Ashwin Kumar Baria [13] involving 50 patients, 10% of them had no identifiable cause detected after laparoscopic examination.

In a study by Vander Velpen et al [18] 23% of patients with uncertain diagnosis at the end of the procedure was reported.

In a study by Klingensmith et al [8] involving 34 patients, 26% of patients needed no operative intervention other than laparoscopic exploration.

In a study by Onders RP and Mittendorf EA [10] involving 70 patients, no abnormality was detected in 14.2% of cases.

#### Recurrent Appendicitis

(55.0%) of patients in our study were diagnosed to have recurrent appendicitis. Histopathological examination confirmed the diagnosis in 19 of them. One of the specimens was reported normal. This is still justifiable because it makes the diagnosis of appendicitis less likely if the patient complains of similar pain in the future.

Laparoscopy is a useful technique for the diagnosis and treatment of abdominal pain even if the appendix is normal on inspection.

In a study by Onders RP and Mittendorf EA [10] involving 70 patients, appendiceal pathology was detected in 7.14% of cases.

#### Therapeutic efficacy of diagnostic laparoscopy

Table No 8: Therapeutic Efficacy

Study	No. of patients	Efficacy (%)
Paajnen et al [4]	35	>70
Present study	40	85.0

The therapeutic efficacy here denotes the percentage of patients who reported a positive outcome (no pain or decrease in pain) at the time of follow up. The efficacy of diagnostic laparoscopy achieved in the present study compares well with other previous studies.

#### Conclusion

In a considerable number of cases, laparoscopy can avoid the need for a laparotomy. Diagnostic laparoscopy plays a crucial role in the care of patients suffering from persistent abdominal pain, and it should be a valuable investigative tool in the toolbox of any practising surgeon. With chronic abdominal pain, laparoscopy is a powerful diagnostic and therapeutic tool, especially when other kinds of research have failed to find a cause for the pain. Routine laparoscopy for chronic stomach discomfort is safe, rapid, and successful. Diagnostic and therapeutic laparoscopy is quite effective. The ability to pinpoint the source of stomach pain or rule out more serious causes not only saves time and money but also helps patients relax. Laparoscopy not only aids in diagnosis but also allows for

therapeutic intervention in most situations, eliminating additional hospitalizations or abdominal explorations.

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#### References

- American Academy of Paediatrics Subcommittee on Chronic Abdominal Pain. Chronic Abdominal Pain in children, Paediatrics 2005; 115:812-5.
- Ferrell BR. The impact of pain on quality of life: A decade of research. N urs Clin North Am. 1995;30:609-24 .
- Camilleri M. Management of patients with chronic abdominal pain in clinical practice. Neurogastroenterology Motil. 2006;18:499-506.
- Paajanen, Hannu, Julkunen, Kristiina, Waris, Heidi. Laparoscopy in Chronic Abdominal Pain: A Prospective Nonrandomized Long-term Follow-up Study, Journal of Clinical Gastroenterology, Feb 2005, 39(2), p.110-114.
- Townsend CO, Sletten CD, Bruce BK, Rome JD, Luedtke CA, Hodges on J E. Physical and emotional functioning of adult patients with chronic abdominal pain: Comparison with patients with chronic back pain. JPain. 2005;6:5-83.
- McGarrity TJ, Peters DJ, Thompson C, McGarrity SJ. Outcome of patients with chronic abdominal pain referred to chronic pain clinic. Am J Gastroenterol. 2000;95:1812-6.
- C. Palanivelu, Art of laparoscopic surgery, Textbook and atlas, Chapter 12-Diagnostic laparoscopy- Indication, tuberculosis and adhesiolysis, Jaypee publishers, 2005, 1st edition, vol 1, p.152-177
- Klingensmith ME, Soybel DI, Brooks DC: Laparoscopy for chronic abdominal Pain .Surg Endosc: 1996;10(11): 1085-7.
- Thanapongsathron W, Kanjanabut B, Vaniyapong T, Thaworncharoen S. Chronic right lower quadrant abdominal pain: laparoscopic approach. J Med Assoc Thai. 2005 Jun; 88 Suppl 1: S42-7.
- Raymond P, Onders MD, Elizabeth A, Mittendorf MD: Utility of laparoscopy in chronic abdominal Pain. Surg: 2003; 134(4): 549-54.
- Gouda MEI-labban and Emad NHokkam, The efficacy of Laparoscopy in the diagnosis and management of chronic abdominal pain. J minim Access Surg 2010 Oct -Dec; 6 (4): 95-97.
- J.H.N. Wolfe, A.R. Behn, B.T. Jackson, Tuberculous peritonitis and role of diagnostic laparoscopy, The Lancet, Volume 313, Issue 8121, Pages 852 - 853, 21 April 1979, doi:10.1016/S0140-6736(79)91266-2.
- Kinnareash ashwinkumar baria role of laparoscopy in diagnosis and management of chronic Abdominal pain indian J.Sci.Res. 2013;4(1): 65-68.
- Lavonius M, et al: Laparoscopy for chronic abdominal Pain. Surg Laparosc & endosc: 1999; 9:42-4.
- VafaShayani, Claudine Siegert, and Philip Favia. The Role of Laparoscopic Adhesiolysis in the Treatment of Patients with Chronic Abdominal Pain or Recurrent Bowel Obstruction, JSLS; 2002: Apr-Jun; 6 (2): 111-114.
- Dunker MS, Bemelman WA, Vijn A, et al: Long-term outcomes and quality of life after laparoscopic adhesiolysis for chronic abdominal pain. J Am Assoc Gynecol Laparosc 2004; 11:36-41.
- Salky BA, Edye MB: The role of laparoscopy in the diagnosis and treatment of abdominal Pain syndromes; Surg Endosc : 1998; 12(7):911-4.
- G C Vander Velpen, S M Shimi, A Cuschieri, Diagnostic yield and management benefit of laparoscopy: a prospective audit, Gut 1994; 35:1617-1621.

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