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A study on the impact of elective diagnostic laparoscopy in diagnosing chronic abdominal pain

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Abstract

Background: Chronic idiopathic pain syndromes are amongst the most challenging and demanding conditions to treat across the whole age spectrum. Despite these patients having undergone numerous diagnostic work ups, their pain remains a challenge to all known diagnostic and treatment methods.

Aims and Objectives: We aim to evaluate the diagnostic and therapeutic efficacy of laparoscopy in the management of such patients in this prospective study.

Materials and methods: Thirty five patients with chronic pain abdomen were included in this study. The pain in all these patients was either of unclear etiology or not responding to the treatment given after clinical assessment and lasting for more than 3 months duration. Pain of shorter duration and patients less than 14 years of age were excluded from the study. All patients were subjected to diagnostic laparoscopy and procedure. The results were tabulated and analyzed.

Results: Females were more affected by this condition and the most common site of pain being the peri-umbilical region. A definitive diagnosis was made per operatively in 29 patients (82.85%) while in the remaining 6 (17.14%), no obvious pathology was detected. The most common findings in our study was post-operative adhesions (50%), followed by recurrent appendicitis (13.33%), Carcinoma (5.71%), Mesenteric lymphadenopathy and Tuberculosis (2.85% each). Pain assessment done at 1 month follow up showed pain relief in 80.55% and 3 month follow up showed pain relief in 70% of patients.

Conclusion: Post-operative adhesions form a majority of cause for causing chronic pain abdomen. Diagnostic laparoscopy is a safe and effective modality for the diagnostic and therapeutic management of such patients.

Keywords: Diagnostic laparoscopy, chronic pain abdomen, post-operative adhesions, diagnostic efficacy.

Introduction

Patients with chronic abdominal pain are amongst the most difficult to manage. Potentially it can be unrewarding for both the patient and the treating physician. Chronic abdominal pain is a difficult complaint^[1]. It leads to evident suffering and disability, both physically and psychologically. Chronic abdominal pain is associated with poor quality of life^[2]. Studies conducted with large community samples or hospital populations imply chronic abdominal pain is a pervasive problem.

Most patients in this group would have already undergone many diagnostic procedures. More than 40% of the patients presenting with chronic abdominal pain have no specific etiological diagnosis at the end of their diagnostic workup^[3, 4, 5, 6]. These searches for pathology often include such procedures as upper and lower gastrointestinal endoscopies, computerized tomography and screening for undetected carcinoma.

When the limits of reasonable noninvasive testing are reached in an individual patient's illness, which is likely to occur without the extensive testing practiced today, the surgeon is often consulted. A high chance of a non-therapeutic abdominal exploration naturally results. Clearly diagnostic laparoscopy is an important intermediate option between refusing to explore a patient's abdomen and performing a laparotomy^[7].

Diagnostic laparoscopy can be done under direct vision with simple equipment as it does not require a video camera or the electronic gadgetry associated with laparoscopic surgery. With advances in optics, laparoscopy allows perfect visual examination of the peritoneal cavity and further makes possible histological diagnosis of target biopsy under vision. Laparoscopy is as much a surgical procedure as an exploratory laparotomy, often just as informative, and to the trained surgeon affords a better view of the entire peritoneal cavity than the usual

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exploratory laparotomy. To achieve a high rate of positive diagnosis from laparoscopy requires much more than correct technique, it requires a thorough background of surgery, sound clinical acumen as also knowledge and awareness of abdominal pathology [8]. In many cases it prevents unnecessary/negative laparotomy. The rapid recovery and return to normal activity that follow diagnostic laparoscopic surgery provide an extra incentive for the surgeon to adopt more laparoscopic techniques. Hence, the present study 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 Medical College the study group consisted of 30 patients admitted to the surgical wards with pain abdomen of 3 months duration or more. 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 intra operative 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 a part of the work up of a patient the following investigations were done routinely

Hemoglobin 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
Electrocardiogram
Ultrasonogram abdomen and 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
Barium studies
Esophago gastro duodenoscopy
Colonoscopy
Computerised tomograph of the abdomen
Written informed consent was taken prior to all the procedures.

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 >3months duration of both sex.

All cases of undiagnosed chronic abdominal pain in patients >14years 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 <3months

duration of both sex.

All cases of undiagnosed chronic abdominal pain in patients <14years of age.

All surgeries were carried out under general anaesthesia. All patients had a Ryle's tube inserted and bladder catheterized prior to anaesthesia. Pneumoperitoneum was created using Hasson's technique. A 10mm umbilical camera port was inserted and two lateral 5mm ports depending on the organ of interest and the suspected pathology.

The surgical procedure carried out were depending on the intra operative findings and as per indications which ranged from biopsy from suspicious lesions to adhesiolysis to appendectomy. All the ports were closed using absorbable suture materials at the end of the procedure.

Age distribution

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

Age (in Years)	No. of Patients	Percentage (%)
15-30	15	50
31-40	7	23.33
41-50	5	16.66
51-60	2	6.66
61-70	1	3.33
Total	30	100

Our study of 35 patients with chronic pain abdomen showed a peak incidence of chronic pain abdomen in the third decade. The youngest patient in our study was 15 years and the oldest patient being 69 years. The mean age of presentation was 35 years.

Sex distribution

Table 2: Sex Distribution of Patients Presenting With Chronic Pain Abdomen

Sex	No. of cases	Percentage (%)
Male	10	33.33
Female	20	66.66

Our study of 30 patients showed a female preponderance to chronic pain abdomen (66.66%).

Table 3: Duration of pain before laparoscopy

Duration of pain (months)	No. of patients	Percentage (%)
3-12	10	33.33
12-18	4	13.33
18-36	15	50
>36	1	3.33

50% of the patients in our study gave a history of pain abdomen of duration between 18 to 36 months.

Table 4: Location of Pain

Region of pain	No. of Patients	Percentage (%)
Upper abdomen	5	16.66
Peri umbilical	12	40
Lower abdomen	3	10
Diffuse abdomen	10	33.33

The majority of the patients in our study of 30 patients presented with peri-umbilical region pain. It was followed closely by diffuse pain abdomen.

Table No 5: History of Previous Abdominal Surgeries

History of surgery	No. of cases	Percentage (%)
Present	20	66.66
Absent	10	33.33

Around 20(66.66%) of patients in our study had undergone a previous surgery compared to 10 (33.33%) of them without any history of abdominal surgeries. Most of the patients had a previous history of tubectomy and subsequent adhesions.

Table 6: Findings at laparoscopy and intervention done

Diagnosis	Procedure	No. of Patients	Percentage (%)
Post-operative adhesions	Adhesiolysis	15	50
Normal Study	No intervention	5	16.66
Recurrent Appendicitis	Appendectomy	4	13.33
Chronic Cholecystitis	Cholecystectomy	2	5.71
Carcinoma	Biopsy	2	5.71
Mesenteric Lymphadenopathy	Biopsy	1	2.85
Tuberculosis (Strictures)	Resection Anastomosis with Cat 1 ATT	1	2.85

In our study of 30 patients, the most common finding was post-operative adhesions, in 50% of patients. Most of the patients in this group were females and had a past history of abdominal surgery, tubectomy in most cases. Adhesiolysis was done in all these patients.

The next most common finding at laparoscopy in our study was a normal study (16.66%). These patients were just observed and followed up.

Recurrent appendicitis was our per operative diagnosis in 13.33% 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. One of the patient in this group had adhesions between the appendix and the lateral abdominal wall. Adhesiolysis and appendectomy was done. HPE turned out to be chronic inflammation in the appendix and hence included in this group for statistical analysis.

We did laparoscopic cholecystectomy for 2 of our patients. HPE confirmed our findings in this group of patients.

2 patients were diagnosed with carcinoma per operatively. One of them being Carcinoma pancreas and the other had peritoneal deposits whose biopsy turned out to be Adeno Carcinoma. Mesenteric lymph node biopsy was done in 1 patient.

Diagnosis of tubercular strictures was made in 1 patient.

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 5 to 12 days with a mean duration of stay of 8.5 days.

Duration of procedure

The average length of the operative time was 65.12 minutes and two patients required conversion to an open procedure. Both the cases were converted due to technical difficulties.

Follow up

During the follow up period, all patients were re-evaluated for pain. The patients were reviewed at one month and three months post operatively. Subjective assessment of pain was done during the follow up and positive outcome (less pain or disappearance of pain) was noted and negative outcome (persistence of pain or worsening pain) was also noted. 5 patients were lost to follow up at the three month time frame.

Table 7: Post-Operative Pain Relief

Duration (in months)	Positive Outcome (%)	Negative Outcome (%)
At 1	80.55	19.45
At 3	75	25

Discussion

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.

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 30 patients were considered who were admitted in the surgical wards to Medical College. All patients had pain abdomen lasting for more than a period of three months.

Age and sex incidence

There were 10 males and 20 female patients in the study. The age group of patients in this study ranged from 15 to 69 years with the average age being 35 years. Male: Female ratio was 1:1.9

Table 8: Comparison of average age incidence

Study	Average age in years
Klingensmith <i>et al.</i> [9]	39
Thanaponsathron <i>et al.</i> [10]	27.5
Present study	35

In a study involving 34 patients by Klingensmith *et al.* [9] 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.* [10] of 30 patients with chronic right lower quadrant pain, the average age was 27.5 years.

In a study by Raymond *et al.* [11] for 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 Hokkam¹² 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.* [11] 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 Hokkam¹² involving 30 patients, the duration of pain ranged from 3 to 15 months.

Prior surgery

Table 9: Comparison of Past History of Abdominal Surgeries

Study	No. of patients with Prior surgery (%)
Gouda M El- Labban and Emad N Hokkam [12]	56.6
Kinnaresh Ashwin Kumar Baria [13]	22
Present study	66.66

In our study of 35 patients, 22 patients had previous history of abdominal surgery. In a study by Klingensmith *et al.* [9] involving 34 patients, most of the patients had previous history of abdominal surgery.

In a study by Gouda M El- Labban and Emad N Hokkam¹² involving 30 patients, 17 had a previous history of abdominal surgery. In a study by Kinnaresh Ashwin Kumar Baria [13] involving 50 patients, 11 of them had a past history of abdominal surgery.

Laparoscopic Diagnosis

In our study comprising 30 patients, laparoscopy identified pathology in 25 patients (83.33%). No abnormality was found in the remaining 5 patients (16.66%) who were just observed without any intervention.

Post-operative adhesions

Table 10: Comparison of Patients with Adhesions

Study	No. of patients with adhesions (%)
Lavonius M <i>et al.</i> [14]	63
Klingensmith <i>et al.</i> [9]	56
Present study	50.00

50.00% of the patients in our series were found to have intestinal adhesions secondary to a prior abdominal surgery, mostly tubectomy (in 8 patients). Some patients had a past history of appendectomy (in 4), cholecystectomy (in 2), hysterectomy (in 4) and one patient had a prior history of laparotomy for hollow viscous perforation. Adhesiolysis was done as a therapeutic procedure. Lavonius M *et al.* [17] 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.* [9] involving 34 patients, 56% of them underwent adhesiolysis.

Normal Study

In a study by Klingensmith *et al.* [9] involving 34 patients, 56% of them underwent adhesiolysis.

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

In a study by Dunker S *et al.* [16] laparoscopic adhesiolysis

resulted in a positive outcome in more than 50% of patients.

Normal study

17.14% of patients in our study did not have any pathology detected per operatively. In a study by Kinnaresh Ashwin Kumar Baria¹³ involving 50 patients, 10% of them had no identifiable cause detected after laparoscopic examination.

In a study by Klingensmith *et al.* [9] involving 34 patients, 26% of patients needed no operative intervention other than laparoscopic exploration.

Recurrent appendicitis

4 (13.33%) of patients in our study were diagnosed to have recurrent appendicitis.

Histopathological examination confirmed the diagnosis in 3 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 [17].

In a study by Onders RP and Mittendorf EA [11] involving 70 patients, appendiceal pathology was detected in 7.14% of cases.

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

Laparoscopy has an effective diagnostic accuracy and therapeutic efficacy in the management of patients who present to us with chronic abdominal pain, especially in whom conventional methods of investigations have failed to elicit a cause for the pain.

Laparoscopy is safe, quick and effective modality of investigation for chronic abdominal pain. Diagnostic laparoscopy has a high diagnostic and therapeutic efficacy. Ability to pin point a cause for the abdominal pain or exclude a more major cause for pain not only avoids further investigations but also plays a significant role in alleviating the fears in the minds of the patients. Not only does laparoscopy point to a diagnosis, it has the added advantage that therapeutic intervention can be done at the same sitting in most cases thus avoiding another hospitalization or another exploration of the abdomen. Laparoscopy prevents unnecessary laparotomy in a significant number of cases. Diagnostic laparoscopy has a definitive role in the management of patients with chronic pain abdomen and should be an important investigative tool in the armamentarium of all practicing surgeons.

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Conflict of interest

None

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