Original Research Article

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Role of diagnostic laparoscopy in 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.

Methods: To evaluate role of diagnostic laparoscopy in chronic abdominal pain a prospective observational study was done. The present study was conducted on patients with undiagnosed chronic abdominal pain coming to the Department of Surgery, Dr. D. Y. Patil Medical College, Hospital and Research Centre, Pimpri, Pune. 75 patients with chronic abdominal pain who attend the General Surgery Department (OPD) were included in the study. Patients were included in the study after taking their voluntary informed consent. The categorical variables were assessed using Pearson chi-square. The quantitative variables were assessed using T-test. The test was considered significant only if the p value comes out to be less than 0.05.

Results: Based on the findings of the study after performing diagnostic laparoscopy for 75 patients with chronic abdominal pain it was found that most common finding was of appendicitis (32%) followed by abdominal Koch's (24%) and post-operative pain relief using VAS showed p value of less than 0.05 at 3 months of follow up post diagnostic laparoscopy.

Conclusions: The present study concluded that laparoscopy is an effective diagnostic role in evaluating patients with chronic abdominal pain, in whom conventional methods of investigations have failed to elicit a certain cause. The advantage of diagnostic laparoscopy over non-invasive methods is the ability to perform therapeutic procedure at the same time in cases of chronic abdominal pain. Diagnostic laparoscopy is safe, cosmetically better and having less morbidity.

Keywords: Chronic abdominal pain, Diagnostic laparoscopy, Undiagnosed

INTRODUCTION

Chronic abdominal pain is a common complaint of the patients seeking a primary care physician. Chronic abdominal pain is defined as recurrent abdominal pain on and off for more than three months duration. It is unrewarding for both the patient and physician. It leads to evident suffering and disability in patient both physically and psychologically. It is associated with poor quality of life. Population based studies have shown that chronic abdominal pain is a pervasive problem. Patients with

chronic abdominal pain undergo numerous diagnostic studies, but their pain remains an undiagnosed entity.²⁻⁶ More than 40% of the patients have no diagnosis after extensive workup and hence is often referred as unexplained chronic abdominal pain (UCAP). Laparoscopy, developed in the twentieth century, offers a simple, rapid, and safe method to evaluate and diagnose intra-abdominal diseases.⁷ The success of laparoscopy in making definite and reliable diagnosis of abdominal disorders over the past two decades, has firmly established it in the armamentarium of a general surgeon

to perform this procedure safely. Despite this fact, general surgeons are reluctant to use this method of diagnosis as often as they can.

Diagnostic laparoscopy can be done under direct vision using simple instruments of laparoscopy. With advances in optics, laparoscopy allows visualization of entire peritoneal cavity and further makes possible histological diagnosis of target biopsy under vision. Laparoscopy is as much a surgical procedure as exploratory laparotomy, often just as informative, and to the trained surgeon allows complete visualization of entire peritoneal cavity. To achieve a high rate of positive diagnosis from laparoscopy requires much more than correct technique; it requires thorough background of surgery, sound clinical acumen as also knowledge and awareness of abdominal pathology. 8-10

Objectives of the study are to perform diagnostic laparoscopy in all case with chronic abdominal pain, having no definitive cause. The study will allow to know etiology of chronic abdominal pain, take biopsy from abnormal intraoperative findings or lymph nodes and pathological confirmation of the disease by biopsy or aspiration of fluid and to avoid unindicated exploratory laparotomy.

METHODS

A hospital based prospective observational study was done at Department of Surgery, Dr. D. Y. Patil Medical College, Hospital and Research Centre, Pimpri, Pune, Maharashtra, India. The period of data collection was spread over one and half year, months from October 2017 to March 2019.

Study setting

75 patient's attending the tertiary care center with chronic abdominal pain to assess the diagnostic laparoscopy as a tool for diagnosing chronic abdominal pain who fulfilled the inclusion criteria.

Inclusion criteria

All patients with chronic abdominal pain of 6 months or more duration, with normal or inconclusive investigations coming to surgical OPD and patients of age group 18 to 65 years were included

Exclusion criteria

Patients with acute abdomen pain, cardiorespiratory disease, abdominal wall sepsis, pregnancy, known abdominal malignancy, using anti-psychiatric drugs, patient under age of 12 and immunocompromised patients were excluded.

Statistical analysis

Quantitative data is presented with the help of mean and standard deviation. Comparison among the study groups is done with the help of unpaired t test as per results of normality test. Qualitative data is presented with the help of frequency and percentage table. Association among the study groups is assessed with the help of ANOVA, student 't' test, Fisher and Chi-Square test. 'p' value less than 0.05 is taken as significant.

Pearson's chi-squared test

$$X^2 = \sum_{i=1}^n \frac{(o_i - E_i)^2}{E_i}$$

Where X^2 = Pearson's cumulative test statistic.

 O_i = an observed frequency; O_i

n= the number of cells in the table.

Results were graphically represented where deemed necessary. Appropriate statistical software, including but not restricted to MS Excel, SPSS version 20 will be used for statistical analysis. Graphical representation will be done in MS Excel 2010.

RESULTS

Majority of the patients (36%) were in the age group of 21-30 years followed by 28% in the age group of 31-40 years, 14.7% in the age group of 41-50 years, 7.9% in the age group of 61-65 years and 6.7% in the age groups of 18-20 years and 51-60 years. The mean age of the patients was 36.31 ± 13.16 years (Table 1).

Table 1: Distribution of patients according to age.

Age (years)	N	%	
18-20	5	6.7	
21-30	27	36	
31-40	21	28	
41-50	11	14.7	
51-60	5	6.7	
61-65	6	7.9	
Total	75	100	
Mean±SD	36.31±13.16		

Table 2: Distribution of patients according to gender.

Gender	N	%
Male	29	38.7
Female	46	61.3
Total	75	100

46 (61.3%) patients of the study group were female while 29 (38.7%) patients were male (Table 2).

The most common symptoms were pain (100%) followed by vomiting (44%), fever (32%), abdominal distension (18.6%) and bowel symptoms (9.3%) (Table 3).

Table 3: Distribution of patients according to symptoms.

Symptoms	N	%
Pain	75	100
Vomiting	33	44
Fever	24	32
Abdominal distension	14	18.6
Bowel symptoms	7	9.3

10 (13.3%) patients had pain in abdomen for 3-12 months while 28 (37.4%) and 15 (20%) patients had pain in abdomen for 12-18 months and 18-36 months respectively. 22 (29.3%) patients had abdominal pain for >36 months (Table 4).

Table 4: Distribution of patients according to duration of pain before laparoscopy.

Duration of pain (in months)	N	%
3-12	10	13.3
12-18	28	37.4
18-36	15	20
>36	22	29.3
Total	75	100

The most common laparoscopy findings were appendicitis (32%) followed by Koch's abdomen (24%), adhesions (24%), sub-acute intestinal obstruction (SAIO) (8%), chronic cholecystitis (4%) and hernia (1.3%). 5 (6.7%) patients had normal findings (Table 5).

Table 5: Laparoscopy findings of patients.

Laparoscopy findings	N	%
Appendicitis	24	32
Koch's abdomen	18	24
Adhesions	18	24
Sub-acute intestinal obstruction	6	8
Chronic cholecystitis	3	4
Hernia	1	1.3
Normal	5	6.7
Total	75	100

All 24 patients diagnosed with appendicitis underwent laparoscopic appendectomy. In all 20 patients diagnosed with Koch's abdomen, laparoscopic biopsy was performed and positive patients were treated with antitubercular drugs by standard protocols. All patients with adhesions were treated by adhesiolysis. Patients with subacute intestinal obstruction were treated by band release

(3 patients) and by adhesiolysis (3 patients). 3 patients which were diagnosed to have chronic cholecystitis were treated by laparoscopic cystectomy. 1 patient of hernia was treated by trans-abdominal pre-peritoneal hernia repair (Table 6).

Table 6: Distribution of patients according to treatment.

Histopathology findings	Treatment	N	%
Appendicitis	Appendectomy	24	32
Koch's abdomen	Anti-tubercular treatment	20	26.7
Adhesions	Adhesiolysis	18	24
SAIO	Band release (3)/ adhesiolysis (3)	6	8
Chronic cholecystitis	Laparoscopic cystectomy (3)	3	4
Hernia	Trans-abdominal pre-peritoneal hernia repair	1	1.3

Table 7: Comparison of post-operative pain relief during follow-up of patients.

	Presentation		1 mo	month 3 mo		nths	P
	N	%	N	%	N	%	value
VAS	6.73	0.54	5 37	0.52	4 31	0.50	<0.05
score	0.75	0.51	3.37	0.52	1.31	0.50	٧٥.٥٥

The post-operative pain relief was assessed by visual analog scale (VAS) score (Table 7). The mean VAS score at presentation was 6.73 ± 0.54 . The VAS score reduced significantly at 1 month (5.37 ± 0.52) and 3 months (4.31 ± 0.50) . There was significant improvement in VAS score at follow-up as per ANOVA test (p<0.05).

DISCUSSION

In the present study, majority of the patients (36%) were in the age group of 21-30 years followed by 28% in the age group of 31-40 years, 14.7% in the age group of 41-50 years, 7.9% in the age group of 61-65 years and 6.7% in the age groups of 18-20 years and 51-60 years. The mean age of the patients was 36.31±13.16 years. 46 (61.3%) patients of the study group were female while 29 (38.7%) patients were male. This is similar to the studies of Baria et al, Kumar et al, Parray et al and Lingala. 11-14

Baria et al study evaluating the use of the laparoscope in the diagnosis and management of patients with chronic abdominal pain found age group ranged from 13-55 years. Most of the patients studied were females (84%). Kumar et al study assessing the diagnostic and therapeutic role of laparoscopy in patients with unexplained chronic abdominal pain observed mean age of the patients was 34.42±2.56 years. More than half of the patients studied were females (62%). 12

Parray et al prospective observational study evaluating the role of diagnostic laparoscopy in patients with acute and chronic abdominal conditions found 70 patients (21 male, 49 female) and age ranged from 15-80 years with a mean age of 36.4 years.¹³

Lingala et al study on diagnostic laparoscopy in chronic abdominal pain found 84 patients with chronic pain abdomen with a peak incidence of chronic pain abdomen in the third decade. The youngest patient was 16 years and the oldest patient being 62 years. The mean age of presentation was 34 years. 84 (65%) patients showed a female preponderance to chronic pain abdomen. The most common symptoms in the study were pain (100%) followed by vomiting (44%), fever (32%), abdominal distension (18.6%) and bowel symptoms (9.3%). This is comparable to the study of Parray et al. 13

Parray et al prospective observational study evaluating the role of diagnostic laparoscopy in patients with acute and chronic abdominal conditions observed pain was the most common presenting symptom in 62 patients (88.6%). Vomiting was 2nd most common complaint being present in 31 patients (44.3%) followed by loss of appetite being present in 30 patients (42.9%),distension in 26 patients (37.1%), loss of weight 20 patients (28.6). Other complaints included (altered bowel habits present in 11 patients (15.7%), dysuria 7 patients (10%), fever 5 patients (7.1%) and bleeding per rectum being present in 2 patients (2.9%). 13

In present study, 10 (13.3%) patients had pain in abdomen for 3 - 12 months while 28 (37.4%) and 15 (20%) patients had pain in abdomen for 12-18 months and 18-36 months respectively. 22 (29.3%) patients had abdominal pain for >36 months. This is consistent with the studies of Lingala et al, Baria et al, Kumar et al and Raymond et al. 11-12,14-15

Lingala et al study on diagnostic laparoscopy in chronic abdominal pain observed 52.38% of the patients gave a history of pain abdomen of duration between 18 to 36 months. ¹⁴ Baria et al study evaluating the use of the laparoscope in the diagnosis and management of patients with chronic abdominal pain observed mean duration of pain was seven months with the range of duration from three to eleven months. ¹¹

Kumar et al study assessing the diagnostic and therapeutic role of laparoscopy in patients with unexplained chronic abdominal pain found mean duration of pain was 9.5±2.4 months. After 2 months of follow up 40 patients had complete relief from pain while 46 patients had decrease in pain score. Rest 14 patients showed no improvement in pain. Raymond et al reported improvement of pain in 74% of patients with chronic right lower abdominal pain. 15

The most common laparoscopy findings were appendicitis (32%) followed by Koch's abdomen (24%),

adhesions (24%), SAIO (8%), chronic cholecystitis (4%) and hernia (1.3%). 5 (6.7%) patients had normal findings. This finding was consistent with the studies of Ahmad et al, Lingala et al, Baria et al, Kumar et al and Parray et al. 11-16

Ahmad et al study assessing the role of laparoscopy in undiagnosed abdominal pain observed laparoscopic showed inflamed appendix, appendicular fecoliths, enlarged mesenteric lymph nodes, salpingitis, omentum at deep ring, adhesions in pelvis, fluid in cul-de-sac and ovarian cyst, diverticulitis. Final diagnosis was made in 75 (85.2%) patients. In 13 patients (14.7%) no diagnosis was established.¹⁶

Lingala R study observed most common finding was post-operative adhesions, in 51.1% of patients. Most of the patients 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 was a normal study (13%). These patients were just observed and followed up. Recurrent appendicitis was operative diagnosis in 11.9% of the patients.¹⁴

Baria et al study observed out the 50 patients with chronic abdominal pain, a definitive diagnosis was established in 45 patients (90%), while no identifiable cause could be reached in five patients (10%). Most common laparoscopic findings were appendicular pathology (40.7%).¹¹ Other findings included ovarian cysts (16.7%), adhesions (14.8%), gall bladder pathology (7.4%),ileo-caecal mass (7.4%),mesenteric lymphadenopathy (5.6%), strictures (5.6%) and jejunal diverticulum (1.8%). Twenty-two patients showed appendiceal pathology; and their pathology revealed evidence of chronic appendicitis. Other pathological diagnoses such as chronic acalculus cholecystitis, and multiple enlarged mesenteric lymph nodes were found.

Kumar et al study reported most common laparoscopic findings were adhesions (30%). Other findings included pelvic inflammatory disease (25%), abdominal tuberculosis (12%), chronic appendicitis (8%), mesenteric lymphadenitis (5%) and diverticulosis (2%).¹²

Parray et al prospective observational study observed on diagnostic laparoscopy the commonest indication was ascites of undetermined etiology (42.9%), followed by chronic abdominal pain (25.7%), diffuse liver disease (11.4%), acute abdominal pain (SAIO, cholecystitis, acute appendicitis, PID, endometriosis) (5.7%), abdominal tuberculosis (4.3%), focal liver disease (2.9%), bleeding per rectum (2.9%), abdominal malignancy (2.9%) and primary infertility (1.4)%. The post diagnostic laparoscopy outcome were abdominal malignancy 22 (31.4%) followed by abdominal tuberculosis (22.9%), diffuse liver disease 6 (8.6%), focal liver disease 6 (8.6%), PID 4 (5.7%), SAIO 4 (5.7%), post-operative pelvic adhesions 3 (4.3%),

Meckel's diverticulum 2 (2.9%), abdominal plus pulmonary tuberculosis 1(1.4%), endometriosis 1 (1.4%), ovarian cyst 1 (1.4%), pseudomyxoma peritonei 1 (1.4%), chronic appendicitis 1 (1.4%) and inconclusive 2 (2.9%).

It was observed in the study that all 24 patients diagnosed with appendicitis underwent laparoscopic appendectomy. In all 20 patients diagnosed with Koch's abdomen, laparoscopic biopsy was performed and positive patients were treated with anti-tubercular drugs by standard protocols. All patients with adhesions were treated by adhesiolysis. Patients with Sub-acute obstruction were treated by band release (3 patients) and by adhesiolysis (3 patients). 3 patients which were diagnosed to have chronic cholecystitis were treated by laparoscopic cystectomy. 1 patient of hernia was treated by trans-abdominal pre-peritoneal hernia repair. The postoperative pain relief was assessed by VAS score. The mean VAS score at presentation was 6.73±0.54. The VAS Score reduced significantly at 1 month (5.37±0.52) and 3 months (4.31±0.50). There was significant improvement in VAS score at follow-up as per ANOVA test (p<0.05). Similar observations were noted in the studies of Kumar et al, Ahmad et al and Baria et al. 11,12,16

CONCLUSION

Present study concluded that laparoscopy is an effective diagnostic role in evaluating patients with chronic abdominal pain, in whom conventional methods of investigations have failed to elicit a certain cause. The advantage of diagnostic laparoscopy over non-invasive methods is the ability to perform therapeutic procedure at the same time in cases of chronic abdominal pain. Diagnostic laparoscopy is safe, cosmetically better and having less morbidity.

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