International Surgery Journal
Prasad S et al. Int Surg J. 2017 Jun;4(6):1856-1860
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: http://dx.doi.org/10.18203/2349-2902.isj20172390

Original Research Article

Evaluation of efficacy of laparoscopy in patients with chronic abdominal pain

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Received: 11 April 2017
Accepted: 08 May 2017

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ABSTRACT

Background: Chronic abdominal pain is a major cause of surgical dilemma. Patients with chronic abdominal pain usually undergo a battery of investigations without yielding much in diagnosis. The pain in such patients therefore becomes chronic and perpetual source of discomfort. This study was under taken to assess the efficacy of performing diagnostic and therapeutic laparoscopy in patients with chronic abdominal pain for longer than 3 weeks or more.
Methods: This prospective study was performed at a tertiary care level hospital. All patients undergoing laparoscopy for chronic abdominal pain were included in the study from December 2013 to June 2015. The patient's demographic data, duration of pain, diagnostic studies, intra-operative findings during laparoscopy, interventions performed and follow-up were recorded and evaluated.
Results: A total of 50 patients, 22 females and 28 males, between age range of 10 years to 60 years underwent diagnostic laparoscopy for the evaluation and treatment of chronic abdominal pain. The average duration with pain was 10.38 weeks (range 4-32 weeks). Findings included abdomen chronic appendicitis in 15 patients, abdominal tuberculosis in 11 patients, ovarian cyst five patients, sub acute intestinal obstruction in five patients and liver abscess four patients. Meckel's diverticulum, ectopic pregnancy, pelvic abscess, appendicular lump, Psoas abscess and typhilitis were noted in one patient each. Various procedures in accordance with pathology were performed. 92% of patients had pain relief at the time of follow up.
Conclusions: Diagnostic laparoscopy is a better, cost-effective, and efficient method of establishing the diagnosis in patients with chronic abdominal pain.

Keywords: Chronic abdominal pain, Chronic appendicitis, Diagnostic laparoscopy

INTRODUCTION

Chronic abdominal pain can be diagnostic challenge. These difficult patients are frequently seen by many different physicians and are subjected to myriad of tests without identifying the etiology of pain. Surgical consultation often occurs late after other modalities have failed to provide resolution of their symptoms. Chronic abdominal pain is a significant clinical problem that often leads to repeated laparotomies. The introduction of laparoscopic surgery and recent advancements in laparoscopy have been increasingly recognized as a procedure that offers precise visual assessment of intra-abdominal condition for diagnosis and prompt intervention.[1] Laparoscopy has been found to have significant diagnostic and therapeutic role in patients with chronic abdominal pain. In case of diagnostic uncertainty, laparoscopy may help to avoid unnecessary laparotomy, provide accurate diagnosis and help to plan surgical treatment. The main advantage of laparoscopic evaluation

is to detect the presence or absence of intra- abdominal organic lesion. Laparoscopy allows surgeons to visualize and treat many abdominal conditions that could not be diagnosed otherwise. We therefore conducted this study to evaluate the efficacy of diagnostic laparoscopy in patients with chronic abdominal pain.

METHODS

This prospective study was performed at a tertiary level care institution after proper clearance from the institutional ethical committee. This study included patients presenting with history of nonspecific abdominal pain for 3 weeks or more who were admitted in surgical wards between December 2013 to June 2015. The study comprised of 50 patients; 28 males and 22 females. Informed consent was taken from all the patients. Detailed history was recorded from patients and thorough clinical examination was performed. The findings were recorded in the proforma. The recorded data included demographics, duration of pain, location of pain, patient's abdominal examination and diagnostic studies performed. Routine hematological investigations viz. complete blood count, renal function tests and serum electrolytes were performed in all the patients along with urine routine and microscopy. Commonly performed imaging studies included plain abdominal radiography and ultrasounds studies. Barium studies were done where ever indicated. All the patients underwent diagnostic laparoscopy. Intra-operative findings and operative interventions undertaken were also recorded. According to the pathology various surgical methods were employed.

Inclusion criteria

- Patients with history of abdominal pain for three months or more, if physical examination and diagnostic tests are inconclusive.
- Patients with history of previous abdominal surgeries
- Chronic abdominal /pelvic pain
- Infertility

Exclusion criteria

- Age under 10 years
- Patients with cancer
- Pregnant women
- Patients with coagulation defects
- Patients with critical illness
- Medically unfit for surgery.

RESULTS

This study comprised of 50 cases of chronic abdominal pain with peak incidence in 2nd decade. In present study, youngest patient was 10 years and oldest patient 60 years. The mean age of presentation was 30.18 years (Table 1). The incidence in male (56%) was higher than females female (44%) (Table 2). The peak incidence of duration of pain was between 1 to 10 weeks. The average duration of pain was 12.68 weeks. Various symptoms were observed among the patients as described in Table 4. Chronic abdominal pain was further categorized according to the site of pain where most of the patients presented with lower abdominal pain (56%), diffuse abdominal pain (30%) and 40% with upper abdominal pain (Figure 1).

Table 1: Age distribution of patients with chronic abdominal pain.

Age group (yrs)	Number of cases	Percentage (%)
10-20 years	13	26
20-30 years	18	36
30-40 years	9	18
40-50 years	6	12
50-60 years	4	8

Table 2: Sex distribution.

Sex	Number of cases	Percentage (%)
Male	28	56
Female	22	44

Table 3: Duration of pain before laparoscopy.

Duration (weeks)	Number of cases	Percentage (%)
1-10	25	50
10-20	17	34
20-30	7	14
30-40	1	2

Table 4: Various symptoms.

Symptom	Present	Absent	Percentage
Pain	50	0	100%
Vomiting	23	27	46%
Fever	17	33	34%
Abdominal distension	06	44	12%
Bowel symptoms	04	46	8%

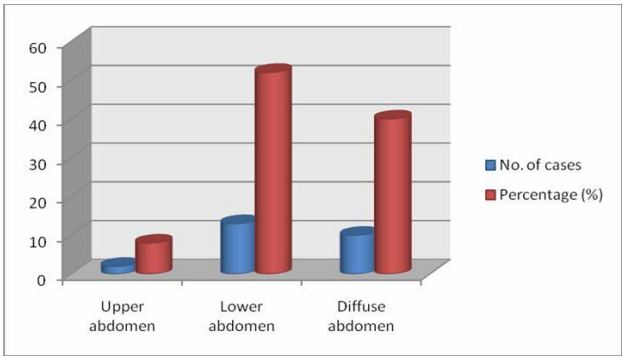

Figure 1: Graph showing location of pain

On diagnostic laparoscopy, the most common finding was appendicitis which was found in 15 (30%) cases. In

these patients, during laparoscopy, no other abdominal and pelvic abnormality was noted except that appendix appeared chronically inflamed and fibrosed (Figure 2). The various positions of appendix on diagnostic laparoscopy were noted (Figure 3). All 15 patients underwent laparoscopic appendectomy. The resultant effect of appendectomy on chronic abdominal pain is shown in Table 5.

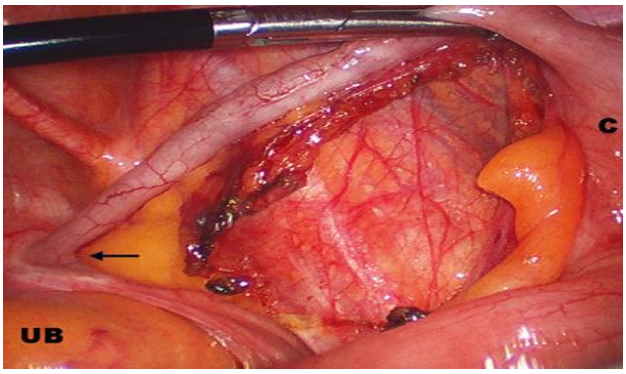

Figure 2: Inflamed appendix on laparoscopy.

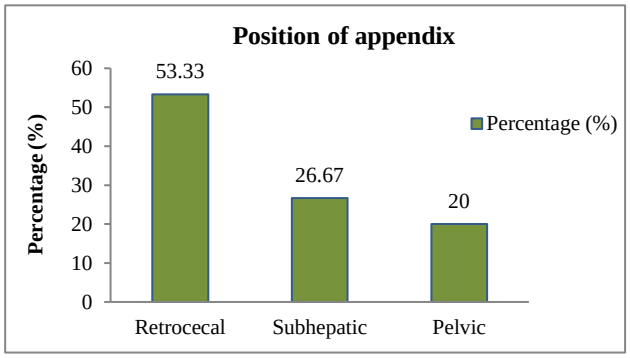

Figure 3: Site of abdominal tuberculosis.

The second common cause findings were abdominal tuberculosis which was found in 11 (22%) cases. Eight patients had intestinal tuberculosis, and 1 each had peritoneal, liver and omental TB (Figure 4 and 5). In all these patients, laparoscopic biopsy was performed and positive patients were treated with anti-tubercular drugs by standard protocols.

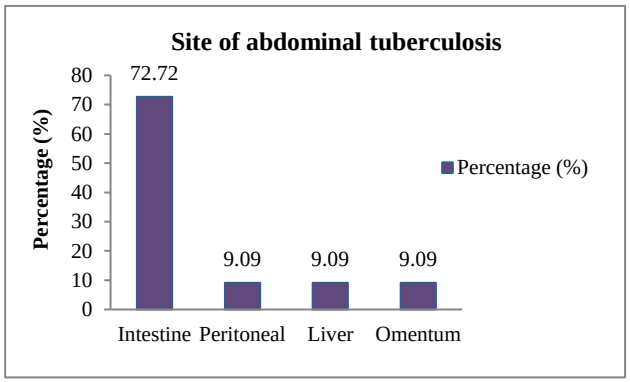

Figure 4: Showing position of appendix.

Figure 5: Peritoneal tuberculosis on laparoscopy.

Sub-acute intestinal obstruction was found in 5 (10%) patients who were treated either by band release in three patients and by adhesiolysis in two patients (Figure 6 and 7).

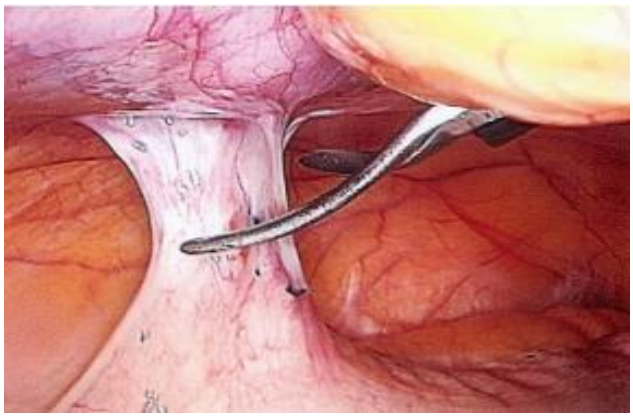

Figure 6: Intra -abdominal adhesions visualized on laparoscopy.

Table 5: Effect of appendectomy on chronic abdominal pain.

Change of pain	Number of cases	Percentage (%)
Resolution of pain	15	100
No change	0	0
Total	15	100

Four patients were diagnosed to have ovarian cyst, laparoscopic cystectomy and ovarian drilling was performed in two patients each. Four patients had liver abscess the drainage of which was performed successfully in all of them. Pelvic abscess and psoas abscess were observed in one patient each and the drainage of the abscess was done laparoscopically in both the patients. Ectopic pregnancy, Meckel's diverticulum and pyosalpinx were observed in one patient each who

underwent salpingectomy, Meckel's diverticulectomy and salpingo-opherectomy respectively (Figure 8).

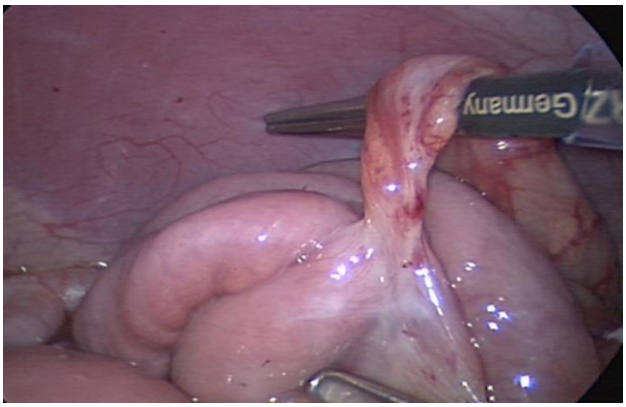

Figure 7: Meso-diverticular band on laparoscopy.

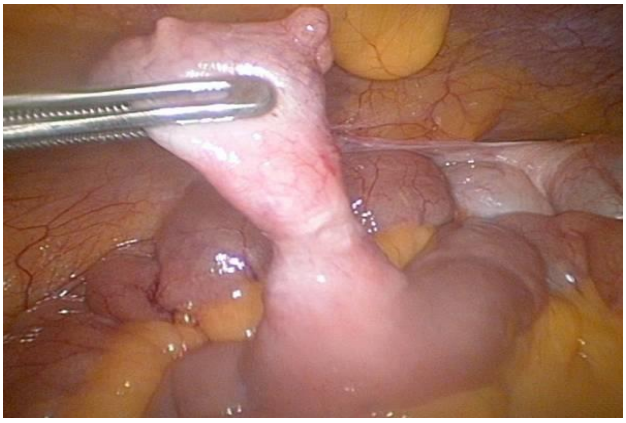

Figure 8: Meckel's diverticulum on laparoscopy.

Two patients were managed conservatively one had appendicular lump and the other was having typhlitis. In 50 patients with chronic abdominal pain, four patients had no pathological finding on laparoscopy, thus giving a diagnostic accuracy of 92% (Table 6).

Table 6: Findings at laparoscopy and treatment adopted.

	Treatment	Number of cases	Percentage (%)
Chronic Appendicitis	Appendicectomy	15	30
Koch's abdomen	ATT	11	22
SAIO	Band release (3) Adhesiolysis (2)	5	10
Ovarian cyst	Ovarian drilling (2) Ovarian cystectomy (2)	4	8

All the patients were followed up at regular intervals for a period of six months. Four patients were lost to follow-up. Subjective assessment of pain was done by asking patients, what occurred to their pain, resolution or no change in pain.

DISCUSSION

Chronic abdominal pain is a common problem, dealt with by a variety of medical specialists. Even after an extensive work up in some patients, no pathological condition is found by non-invasive investigation and the pain is often attributed to unsubstantiated diagnosis. Diagnostic laparoscopy makes it possible for the surgeon to visualize surface anatomy of intra-abdominal organs with greater details than any other imaging modality. Laparoscopy also proves to be useful in establishing a histological diagnosis of wide variety of intra-abdominal pathologies.[1]

Before laparoscopy is performed in chronic abdominal pain, pre-operative imaging studies need to be undertaken. In present study, the patients have undergone endoscopies and ultrasound before laparoscopy.

Laparoscopy helps in establishing the diagnosis in majority of patients. This was demonstrated in studies by Karl Miller et al who reported that laparoscopy provided diagnoses in 89.8% of patients.[2] Similarly in study by Onders et al diagnosis was possible in 85.7% of patients with chronic abdominal pain.[3] In present study 46 (92%) patients had pathological findings identified at the time of diagnostic laparoscopy which is in accordance with previous studies.

In their study, Arya et al found that the most common findings were intestinal and peritoneal tuberculosis and attributed this to the high incidence of tuberculosis among Indian population.[4] In present study the most common finding was chronic appendicitis followed by tuberculosis. This can be explained by the fact that majority of our patients belonged to 2nd decade of life where appendicitis is quite common.

Appendix as a cause of chronic abdominal pain should always be kept in mind and the patients should be thoroughly investigated for the same. Removal of appendix in patients with inconclusive findings has been a matter of debate since ages. In their study, Fayez et al analyzed records of patients with chronic abdominal pain undergoing appendectomy. They reported that in about 92% of patients appendices that were removed had abnormal histological findings and 92% of patients had resolution of pain subsequent to appendectomy.[5] Onders et al, reported improvement in pain in 74% of patients with chronic right lower abdominal pain.[3] In present study, 15 (30%) patients underwent appendectomy for chronic abdominal pain had resolution of pain was observed in all 15 patients (100%). In various studies laparoscopy has also proved beneficial and efficacious in treatment of chronic abdominal pain of any origin (Table 7).

Table 7: Comparison of therapeutic efficiency of laparoscopy in various studies.

Study	Therapeutic efficiency (%)
Onders et al[3]	>70
Paajanen et al[8]	>70
Present study	92

Laparoscopy has a great deal to offer an early diagnosis of abdominal tuberculosis and treatment.[1] Krishnan et al, reported that in patients suspected to have abdominal tuberculosis without evidence of extra abdominal disease, early laparoscopy may be useful to establish a histological diagnosis with acceptably low morbidity (8%).[6] In another study, Rai et al reported abdominal tuberculosis in 23 (92%) patients.[7] In present study, common finding in abdominal tuberculosis were peritoneal and visceral tubercles, varying from 2 mm to 1 cm in size. Ascites and small bowel adhesions were also observed in few patients. The importance of diagnostic laparoscopy cannot be overstated in patients with tubercular peritonitis particularly in areas where sophisticated pathological or genetic investigations are not available. In our study the diagnosis of tuberculosis was successfully established in 11 (22%) patients. All these patients showed significant improvement and resolution in symptoms with anti-tubercular therapy.

Despite multiple advantages laparoscopy has some limitations as well. Deep parenchymal organs, retro-peritoneal space and the inner surface of the hollow organs cannot always be noticed using laparoscopy and the pathologies in these regions need careful observation in order to avoid and inadvertent complication.[8] Another limitation of laparoscopy is loss of dexterity which may be helpful in diagnosing several conditions. Additionally, laparoscopy has more steep learning curve as compared to open surgery.

CONCLUSION

Chronic abdominal pain of unknown origin represents a significant problem in surgical patients. Due to improvement in instrumentation and greater experience in the laparoscopy, the procedure no longer limited to visualization. This study showed that laparoscopy is an effective approach in the management of patients with chronic abdominal pain. Advantages of diagnostic laparoscopy are that it is minimally invasive, safe and efficacious. Additionally, diagnostic and therapeutic procedure can be performed at same time. Nevertheless, patient selection and appropriate operative technique are essential for rewarding outcome.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the institutional ethics committee

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Cite this article as: Prasad S, Jain S, Prakash A, Gautam A, Gadodia M, Gupta A, et al. Evaluation of efficacy of laparoscopy in patients with chronic abdominal pain. Int Surg J 2017;4:1856-60.