



Role of Diagnostic Laparoscopy for Undiagnosed Abdominal Pain

Authors

Dr. Natarajan Ramalingam, Dr. Loganathan Mannu, Dr. Habeeb Mohammed Shajahan, Dr. Karunanithi Ramaiah

Abstract

Purpose: *The objective of this study is to assess the effectiveness of laparoscopy as an emerging diagnostic procedure for patients with undiagnosed abdominal pain.*

Background: *Many patients with long standing abdominal pain remain undiagnosed in spite of various out-patient visits and a spectrum of investigations. This study was undertaken to assess the efficacy of laparoscopy as a diagnostic tool in the patients with chronic undiagnosed abdominal pain for more than 6 months.*

Methods: *Among 300 patients with chronic abdominal pain presented over a period of 2 years, 58 patients, who fulfilled our inclusion criteria, were selected for our study, and they underwent diagnostic laparoscopy using standard operational procedures. The patient's demographic data, duration of pain, investigative findings, intraoperative findings, interventions, and follow up were studied.*

Result: *58 patients (41 females, 17 males) with mean age of 31.9 yrs underwent diagnosed laparoscopy for undiagnosed chronic abdominal pain. Findings included abdominal tuberculosis as the leading cause of abdominal pain followed by appendicitis. 8 patients had no identifiable pathology. 5 patients were lost on follow-up. Out of the remaining 53 patients 47 (88.6%) patients had significant pain relief following diagnostic laparoscopy and appropriate intervention based on the pathology found.*

Conclusions: *Laparoscopy has a definitive role in diagnosis of patients with chronic undiagnosed abdominal pain*

Keywords: *Undiagnosed abdominal pain, Diagnostic Laparoscopy, Abdominal Tuberculosis, Appendicitis*

Introduction

Abdominal pain is the leading symptom for which patients visit surgical out-patient department. Out of these patients there are a certain proportion of them, who in spite of a multitude of investigations were difficult to be put into any specific diagnosis. Often these patients were designated to have functional abdominal pain.

One of the most commonly performed general surgical procedures is appendectomy due to the high lifetime risk of 6.7% and 8.6% for developing appendicitis in women and men respectively ^[1]. As a consequence of difficulty in diagnosis of appendicitis, when only the routinely used done clinical and radiological evaluation is used, in about 15% to 30% patients, a normal appendix was removed ^[2,3]. Moreover, in females of reproductive age group, diagnosis of appendicitis can be problematic as many gynaecological problems in this age group can imitate the symptoms of appendicitis. Hence patients with abdominal pain can be so annoying to surgeons and gynaecologists at times. Various studies have reports suggesting laparoscopy as a definitive diagnostic tool in such patients.

The advent of laparoscopy has inculcated an interest in the minds of the surgeons to develop it as a diagnostic modality in difficult scenarios..

The sensitivity of Ultrasonography ^[4,5] ranges from 75% to 89 % and specificity ranges between of 86% to 100% in acute appendicitis, but because it is investigator dependent, it is unreliable in difficult cases. Of late, computed tomographic (CT) scans, has shown a positive predictive value

of 92% and a negative predictive value of 98% ^[6,7].

Various authors have put forward various scoring systems to aid in increasing the sensitivity of diagnosis appendicitis^[8-10]. But the variables used in those systems were highly impractical and laborious.

Due to the advancement in the knowledge of laparoscopy and anaesthesia it is often safe to use this as a primary modality of investigations instead of tedious spectrum of investigation as most of the patient can undergo it as a day case procedure and the pathology can be addressed surgically in the same anaesthesia in most of the patients.

Materials and methods:

Patient Selection:

Initially 300 patients were selected over a period of 2 years from surgical out-patients department of our community teaching hospital. Thorough history and detailed examination was done in all these patients. This included a complete abdominal examination, rectal and vaginal examination (Gynaecological work-up). All patients were subjected to various standard blood and radiological investigations. In 187 patients a specific diagnosis was found and treated accordingly. From the remaining 113 patients, 58 patients, who fulfilled our inclusion criteria, were selected and included in our Cross sectional study. All these patients underwent diagnostic laparoscopy using standard operational procedures.

Table 1: Criteria for Diagnostic Laparoscopy

Inclusion Criteria	Exclusion Criteria
Patients with abdominal pain of more than 6 months and	i. Patients undergoing some elective abdominal procedure
i. Normal or inconclusive investigations	ii. Uncorrectable coagulopathy
ii. Normal or inconclusive gynaecological examinations	iii. Known cause of pain
	iv. Severely decompensated cardio-respiratory reserve
	v. Pregnancy
	vi. Unwillingness for the procedure

Table 2: List of Investigations performed

Primary Investigations	
1	Haemogram
2	Blood Sugar, RFT
3	Urine routine, microscopy & Culture
4	Occult blood
5	Xray Chest, Abdomen
6	USG
Additional Investigations as indicated by symptomatology	
1	Contrast GI studies Gastrointestinal symptoms
2	Ascitic fluid analysis Clinical / radiological diagnosis of ascites
3	LFT History and findings suggestive of liver disease
4	CT Abdomen Non-specific Ultrasound findings
5	Serology for tuberculosis H/O loss of appetite and weight, Clinical suspicion of tuberculosis
6	UGIsocopy Upper abdominal pain
7	Colonoscopy Haematochezia, constipation, tenesmus etc.
8	Intravenous pyelogram Urological symptoms / Ultrasound findings

After thorough clinical examination and various investigations of the 300 patients diagnosis was made in 187(62%) patients. The

main diagnoses of these patients were abdominal tuberculosis, gynecological causes and urological causes.

Table 3: Diagnosis by routine & specific investigations

Diagnosis		No. of patients	Investigations contributing
1	Intra-abdominal Tuberculosis	33	Raised ESR, Ultrasound, Ascitic tap, Barium meal follow-through, Serology.
2	Ureteric Calculus & UTI	52	Urine C&S, Ultrasound, IVP and Cystoscopy
3	Adhesions	32	Previous H/O Surgery, Plain Xray abdomen, Laparotomy findings in operated cases
4	Gynaecological Causes(Ovarian Cysts, PID, Endometriosis, Fibroid)	65	History, Vaginal examination, Ultrasound,
5	Genitourinary tuberculosis	4	Mic. Haematuria, Urine AFB, Ultrasound, IVP & Cystoscopy
6	Diverticular disease	1	History, Barium enema, colonoscopy

Out of the remaining 113 (38%) of patients, 58 patients underwent diagnostic laparoscopy, who were selected based on following inclusion & exclusion criteria.

All these 58 patients had repeated outpatient visits and had been through repeated investigations which were not contributory.

After obtaining Ethical committee clearance and Informed consent all the 58 patients underwent Diagnostic Laparoscopy.

Results, Findings & Treatment:

The table and chart below demonstrates various diagnosis obtained and treatment specific to the particular diagnosis.

Table 8: Diagnosis from findings at diagnostic laparoscopy and pathological analysis / treatment

Diagnosis	Treatment	No. of cases	Percentage	M	F
Tuberculosis	Antituberculous Therapy	21	36.2%	5	16
Tuberculous Ileal Stricture causing subacute intestinal obstruction	Ileal resection & Anastomosis (Open)	1	1.7%	1	0
Appendicitis	Appendectomy	17	29.3%	5	12
Adhesions	Adhesiolysis	2	3.4%	1	1
Pelvic Inflammatory disease	Antibiotics	6	10.3%	0	6

Endometriosis	Medical or Surgical management	1	1.7%	0	1
Cholecystitis	Cholecystectomy	1	1.7%	1	0
Meckel's Diverticulum	Resection & Anastomosis	1	1.7%	1	0
No organic cause found	Observation / follow-up	8	13.8%	3	5

Interpretation

Abdominal tuberculosis is the common finding among the study group (22 patients including the tuberculous small bowel obstruction). All patients were treated with standard ATT regimen after necessary surgical intervention in specific cases.

Appendicitis is the second most common finding. These patients were treated with appendicectomy.

Follow up

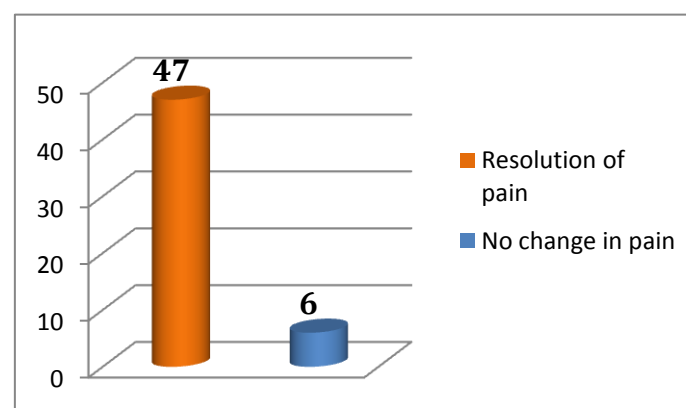
The patients were followed up every month for a period of 9 months to one year. 5 patients were lost on follow-up. Subjective assessment of pain was done to assess the effective of treatment given following diagnosis by laparoscopy

Outcome:

Table 9: Effect of diagnostic laparoscopy followed by intervention

Outcome	No. of cases	Percentage
Resolution of pain	47	88.6%
No change in pain	6	11.3%
Total	53	Patients who were lost on follow up were excluded

Fig 12: Graph showing the Effect of diagnostic laparoscopy



Discussion

Intractable abdominal pain can sometimes be a surgeon's nightmare, resulting in subjecting patients to a spectrum of investigations still hitting a dead end or even worse trying empirical management, both medical and surgical. Consequently, not only that invariably patients lose their hard earned money in unfocused work ups, but also patients end up getting treated with unnecessary medications and surgeries. In an attempt to find a solution to the issue, we tried to figure out the efficiency of laparoscopy in using it as a diagnostic procedure in such patients.

In one earlier study about diagnostic laparoscopy, they identified treatable causes in 69 from 70 patients, the most common diagnosis being appendicitis or gynaecological causes^[11]. In another study postoperative adhesions were found as the main finding and these patients were treated with adhesiolysis^[12]. Overall, from various studies 86% of patients were successfully diagnosed by laparoscopy. Moreover in many of these patients it was possible to treat the cause simultaneously by laparoscopy.

Abdominal tuberculosis and Appendicitis were the most common cause in our study conducted in the southern part of India, possibly due to regional distribution of the disease.

Certain unexpected diagnoses which were not easily detectable by other diagnostic modalities were identified in course of our study e.g. Tuberculous ileal stricture causing subacute obstruction, Chronic recurrent appendicitis etc. The high sensitivity of laparoscopy in diagnosing appendicitis has not only helped us to administer

specific treatment to the patients but also reduced the chances of negative appendicectomies^[12-15].

Abdominal tuberculosis is highly prevalent in our subcontinent, which is also clearly evident from our study. There is a definitive role for laparoscopy in diagnosing abdominal tuberculosis at an early stage and hence preventing the subsequent complications like stricture and cocoon formation. In our study some of the findings which gave us the suspicion of abdominal tuberculosis were tubercles, ascites, omental thickening, stalactic bands etc. After obtaining a tissue histopathological confirmation we were able to treat these patients with Anti tuberculous therapy and render them pain free.

Diagnostic laparoscopy is also helpful in the field of gynaecology wherein, females of reproductive age group, who often suffer from recurrent symptoms of gynaecological diseases like pelvic inflammatory disease, endometriosis etc., can be identified and treated, hence providing them a better quality of life. It has also become a vital tool in evaluation of patients with unexplained infertility to identify tuboovarian pathologies and decide the need for Assisted Reproductive Technology.

The importance of diagnostic laparoscopy in the hands of oncosurgeons cannot be overstated. This modality has certainly avoided number of unnecessary laparotomies which were usually performed in earlier years for malignancies and may eventually turned about to be inoperable. It has also allowed the decision to provide the patient neoadjuvant chemotherapy, hence down staging the tumor and amenable to future curative

resection. This has also made staging laparotomy an obsolete procedure.

Our study is a genuine attempt to evaluate the effectiveness of diagnostic laparoscopy, especially in patients with long standing abdominal pain but not attributed to any specific pathology.

In our study during the procedure a thorough exploration of peritoneal cavity was performed. Once pathology was identified, tissue biopsies were taken, or therapeutic procedure was performed as situation warranted. An open procedure was bowel resection and anastomosis was needed in two patients. In one patient though no pathology was identified, the patient remained pain free during the entire follow up period, possibly a placebo effect. Postoperatively there was no procedure related complication in any of these patients.

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