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LAPAROSCOPY;
INDICATIONS IN THE DIAGNOSIS OF ABDOMINAL PAIN

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ABSTRACT... Objective: To identify the various acute and chronic abdominal conditions presenting as non specific abdominal pain in which diagnostic laparoscopy was indicated to establish a definite diagnosis and treatment. **Design:** Descriptive study. **Setting:** Surgical unit-I of Rawalpindi General Hospital Rawalpindi. **Period:** From February 2005 to February 2006. **Materials & Methods:** All patients who presented with non specific abdominal pain and fulfilled the inclusion criteria were included in the study. The sample size was 150 cases, out of which 71 (47%) were male and 79 (53%) were female. Mean age was 32.65±17 years. Fifty five (36%) patients were admitted through emergency department while 95 (63%) were admitted through OPD. Four main groups were identified who presented with nonspecific abdominal pain in which diagnostic laparoscopy was indicated. These were patients with acute or chronic inflammatory conditions (66%), acute or chronic intestinal obstruction (14%), patients with blunt/penetrating abdominal trauma (11%), and patients of intra abdominal tumor (9%). Out of these 150 cases, 53 cases (35%) had laparoscopy to confirm the diagnosis (diagnostic laparoscopy) while the remaining 97 cases (65%) had both the diagnostic as well as therapeutic laparoscopy. Mean hospital stay was 1.7 Days. **Conclusion:** The study has demonstrated the various acute and chronic abdominal conditions in which laparoscopy in indicated and proved to have higher diagnostic and therapeutic yield, and hence improved the management of these patients.

Key words: Diagnostic /Therapeutic Laparoscopy, Nonspecific Abdominal Pain,

INTRODUCTION

Abdominal pain is the most common cause of hospital admission[1]. It accounts for 5% to 10% of all emergency department visits[2]. It can be one of the symptoms associated with transient disorders or serious disease. Making a definitive diagnosis of the cause of abdominal pain can be difficult, because many diseases can result in this symptom. Most frequently the cause is benign and/or self-limited, but more serious causes may require urgent intervention.

Abdominal Pain presents a diagnostic dilemma. A patient admitted to the hospital with pain in abdomen, a detailed history, physical examination and a few well chosen investigations will reveal the cause of pain. Though this is true, in a majority of patients, attempts at making a diagnosis fail in a proportion of patients. These patients are admitted by the casualty medical officer with various labels attached like renal colic, intestinal colic, acute gastritis etc. history and physical examination fail to provide any clue to the diagnosis. Routine investigations, as are available, are of no help either. These Patients constitute as many as 45% of the hospital admission[3]. In a study done in Britain, out of 6097 patients admitted with abdominal pain, 43% had no obvious cause[4].

No specific abdominal pain is defined as a vague abdominal pain with no fever, leukocytosis, or obvious

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physical signs and an uncertain diagnosis after physical examination and baseline investigations. Whether nonspecific abdominal pain is a disease entity by itself or the presentation of a number of intra abdominal disorders is a moot point.

The main hospital stay for patients admitted with non-specific abdominal pain (NSAP) ranges from 4.1 to 6 days[5], using the traditional "wait and see" management policies that includes repeated clinical examination, radiological[6] investigation and a gynecological opinion. A delay in surgical intervention while further investigation are performed may increase morbidity and prolonging hospital stay. The end result may be an unsatisfactory discharge from hospital after a stay of 4 to 6 days, with the diagnosis of NASP by exclusion.

Exploratory laparotomy has inevitably been undertaken for those who have no definite diagnosis. However, negative laparotomy, especially for those patients in a critical condition and with a low reserve of organ functions, is generally known to result in poor recovery even mortality in patients who underwent open laparotomy for diagnostic purposes. A more accurate less invasive and good recovery method is needed to fulfill such multipurpose demands.

The emergence of laparoscopy in the late 1980's as a credible therapeutic new intervention heralded surgical age. Demonstrable reduction of wound complications, post-operative pain, hospital stay and costs in treating gallbladder disease[7] and gynaecological conditions such as laparoscopic sterilisation and hysterectomy[8] led to the expansion of its use in other abdominal organ pathology, such as the colon[9], stomach[10] and esophagus[11]. Initially laparoscopy was limited to elective surgery but as technology and surgical experience expanded so did the application of laparoscopy into the emergency setting. Laparoscopic surgery has now been described in many abdominal emergencies, such as acute appendicitis, blunt and penetrating trauma[12], perforated peptic ulcer disease[13] and acute Pancreatitis[14], and this variety of conditions seems set to expand further.

When considering the role of laparoscopy there are two distinct clinical scenarios that need to be considered. The first is that a specific pathology is assumed following diagnostic workup and thus a specific procedure is planned, the second is that abdominal pathology of uncertain causation or severity is present, and thus the primary aim of laparoscopy will be diagnostic. Over the last twenty years or more, a number of large cohort studies have reported high definitive diagnosis rates of between 86–100% in unselected patients[15-17], and as surgical experience and technology have improved so have the number of patients who are subsequently managed exclusively with laparoscopic surgery.

Rawalpindi General Hospital is a tertiary care hospital having a large drainage area. A large no of patients present daily in the emergency and out patient department with complaint of abdominal pain due to various reasons. Due to heavy work load on the surgical department it was realized to find out a way that all those patients presenting with nonspecific abdominal pain or where the diagnosis is not confirm after the initial assessment, can be diagnosed accurately and treated accordingly yet reducing the hospital stay and cost of repeated investigations. Role of Diagnostic laparoscopy was assessed in the management of these patients.

Objective

To identify the various acute and chronic abdominal conditions presenting as non specific abdominal pain in which diagnostic laparoscopy is indicated to establish a definite diagnosis and treatment.

MATERIAL AND METHODS

150 patients were included in the study that were admitted in the surgical unit I during the period from Feb 2005 to Feb 2006 included in the study.

Sampling technique

Convenience non probability sampling.

Sample selection

Inclusion criteria

All patients above the age of 10 years who presented in emergency or out patient department with acute or chronic non specific abdominal pain of uncertain etiology and who were fit for general anesthesia were included in

the study.

Exclusion criteria

Patients with the following conditions were excluded;

1. Unstable haemodynamic conditions
2. Pregnancy
3. Patient with coagulation defects
4. Patient with markedly distended bowel loops.
5. Patients who had more than two laparotomies in the past.
6. Patients not willing for surgery.

Data collection

A detailed history was obtained and physical examination carried out; special attention being paid to past episodes of pain, hospitalization and treatment taken. In women, menstrual and obstetrical history was obtained. Immediate investigations included CBC, ESR, urine C/E, plain X-rays of chest and abdomen and ultrasound abdomen. Diagnostic laparoscopies were done under general anesthesia mostly on the morning elective lists. All procedures were done by the same team of surgeons. The information regarding patient's personal data, presentation whether acute or chronic, preoperative diagnosis, laparoscopic findings, procedure performed according to the operative findings and hospital stay (study variables) was collected on proformas. All patients were following up for one month period.

Data analysis

All the data taken from the patients was assessed by SPSS versions 11.0.

RESULTS

From February 2005 to February 2006, 150 patients underwent laparoscopic surgery in the department of General Surgery, Rawalpindi General Hospital. Out of these 150 patients, 71 (47%) were male and 79 (53%) were female. Male to female ratio was 1: 1. 4. The mean age was 32.65±17 years. Fifty five (36%) patients were admitted through emergency department while 95 (63%) were admitted through OPD. Mean hospital stay was 1.7 days. The site of pain in these patients was as fallows:

1. Generalized abdominal pain in 72 patients (48%)
2. Lower abdominal pain in 37 patients (24.7%)
3. Pain right hypochondriun in 32 patients (21%)
4. Pain right iliac fossa in 9 patients (6%)

In 38 patients the onset of pain was acute while 112 patients had chronic abdominal pain. Out of these 150 cases, 53 cases (35%) had laparoscopy to confirm the diagnosis (diagnostic laparoscopy) while the remaining 97 cases (65%) had both the diagnostic as well as therapeutic laparoscopy.

Table-I. Outcome of patients with non-specific abdominal pain (Sample size = 150)

Diagnostic laparoscopy (n=53)		Diagnostic & therapeutic laparoscopy (n=97)
Non-specific abdominal pain (n=19)	Definitive diagnosis (n=34)	Appendicectomy (n=37)
	Abdominal tuberculosis (n=18)	Cholecystectomy (n=30)
	Chronic liver disease (n=7)	Small bowel obstruction (Adhesionolysis = 5, excision of band = 5)
Histopathological diagnosis on tissue biopsy (n=2)	Tumor (n=7)	Ovarian cysts marsuplization (n=5)
Staging of the tumor (n=2)	Pancreatitis (n=2)	Hemicolectomy (n=3)
		Mesenteric tear repair (n=4)
		Thorough pelvic lavage (n=3)
		*Miscellaneous (n=5)
*Salpaingectomy =1, Ophroectomy = 1, Repair liver laceration & haemostasis secured = 1, Feeding Jejunostomy = 1, Triple Bypass - 1)		

Table-II. Patients presenting with generalized abdominal pain and their laparoscopic diagnosis

Laparoscopic diagnosis	Frequency
Acute appendicitis	1
Intra-abdominal tumor	12
Mesenteric lymphadenitis	2
Intestinal obstruction due to mass	1
Disseminated hydatid disease	1
Pancreatitis	1
Redundant sigmoid colon	1
Chronic appendicitis	4
Solitary perforation terminal ileum	1
Paralytic ileus	1
Mesenteric tear	4
Jejunal perforation	1
Liver laceration	1
Abdominal TB	15
Intestinal obstruction due to band	5
Intestinal obstruction due to adhesions	5
Non-specific abdominal pain	16
Total	72

(TB = tuberculosis)

Table-III. Patients presenting with lower abdominal pain and their laparoscopic diagnosis

Laparoscopic diagnosis	Frequency
Acute appendicitis	1
Ovarian cyst	3
Ruptured ectopic pregnancy	1
Mesenteric lymphadinitis	2
Chronic appendicitis	25
Ovarian mass	1
PID	3
Non-specific abdominal pain	1
Total	37

(PID = pelvic inflammatory disease)

Table-IV. Patients presenting with right iliac fossa pain and their laparoscopic diagnosis

Laparoscopic diagnosis	Frequency
Acute appendicitis	6
Ovarian cyst	3
Total	9

Table-V. Patients presenting with right hypochondrial pain and their laparoscopic diagnosis

Laparoscopic diagnosis	Frequency
CLD	6
Chronic cholecystitis	25
Non-specific abdominal pain	1
Total	32

(CLD = Chronic liver disease)

DISCUSSION

This study has evaluated the indications for diagnostic laparoscopy in establishing a definite diagnosis of various acute and chronic abdominal conditions presenting as non-specific abdominal pain.

There is a consensus that laparoscopic diagnosis is useful for those with unexplained abdominal pain.

Abdominal pain has been a challenge to surgeon as well as gynaecologist. Before the era of laparoscopy these patients used to undergo a battery of costly investigations over a period of months, while remaining dissatisfied. Main aim of this study was to evaluate the role of laparoscopy as a major diagnostic tool. Present study has shown that laparoscopy was diagnostic in 56 patients (37%) where no other surgical intervention was required and hence these patients were saved from unnecessary laparotomy, out of these, 19 patients (34%) had no intra abdominal pathology detected on through intra peritoneal inspection and were discharged with the diagnosis of NSAP, while the remaining 37 patients (66%) underwent some diagnostic procedure to confirm the diagnosis like lymph node biopsy, peritoneal biopsy or liver biopsy.

Common pathologies in these patients turned out to be abdominal tuberculosis (48.6%), intra abdominal malignancy (27%) and chronic liver disease (19%).

Abdominal tuberculosis is a common disease in this part of the world as was seen in present study. Difficulties of diagnosis including non-specific presenting features, unhelpful laboratory tests, negative results with tuberculin skin tests and Ziehl–Nelsen staining and false-negative ultrasoundand CT scans[18]. Laparoscopy has a great deal to offer in early diagnosis of abdominal tuberculosis[19]. Common findings in abdominal tuberculosis are peritoneal or visceral tubercles varying from 2mm to 1cm.

No doubt, laparoscopy has been helpful in differentiating suspected intra-abdominal disorders, and assessing operability or resectability of known malignancies[20].

In the past, the diagnostic field of laparoscopy was limited to direct visualization of superficial lesions. With the development of laparoscopic contact ultrasonography and needle biopsy technique, diagnosis and localization of intraparenchymal lesions are easier. It decreases the number of laparotomies for non resectable malignant lesions. In many specific conditions it may be more effective investigation than CT scan or MRI, especially in our setup. As we target biopsy under vision, histological diagnosis is possible in all patients. During Laparoscopy thorough visualization of peritoneal cavity was done to stage the disease in 5 patients in this study while in 5 patients laparoscopic biopsy of the tumor for definitive histo pathological diagnosis was done. In expert hands laparoscopy is even a better option than laparotomy to visualise the entire abdomen because of video magnification.

Two randomized studies have reported on laparoscopy in trauma[21]. but despite this paucity of data some recommendations can be made. It would appear that laparoscopy in trauma has a role in well-selected patients, who, primarily, must be haemodynamically stable, because in unstable patients emergency surgical exploration of the abdomen may be life saving. A significant number of patients who sustain penetrating trauma to the anterior abdominal wall do not suffer a peritoneal breach . Proving that penetration has not occurred negates the need for laparotomy, but current diagnostic modalities, including US and CT scanning is unable to do this due to high false – negative rates. Laparoscopy has been shown to be highly effective at determining peritoneal penetration , resulting in decreased laparotomy rates .Laparoscopic repair of perforating injuries to the diaphragm represents the most frequently described therapeutic application [22-23] but there are increasing reports of laparoscopic haemostasis of minor injuries to the liver or spleen [24] and therapeutic use of laparoscopy to repair limited gastrointestinal injuries[25]. Some surgeons advocate interval washout of intra-peritoneal blood or bile[26] following visceral injury to decrease ileus and peritoneal symptoms.sixteen patients (11%) presented with history of trauma,that were included in this study.Twelve were male and four were female.All patients were admitted through emergency department.In ten patients diagnostic laparoscopy ruled out any intraabdominal injury or breach to the peritoneum,avoiding unnecessary exloratory laparotomies and making the early discharge from the hospital possible.Four patients had transverse mesenteric tears,one patient had jejunal perforation,and one patient had liver laceration.All were managed laparoscopically.

In 92 patients (61.33%) laparoscopy proved to be both diagnostic and therapeutic at the same time. The most common pathologies that were dealt with at the same time were acute/chronic appendicitis, acute/chronic cholecystitis, and small bowel adhesions. Easter et al had high incidence of post operative adhesions, majority of which were treated by laparoscopic adhesiolysis at the same sitting. However in present study post operative adhesions were seen only in 5 patients, while 5 patients had bands causing symptoms. Only explanation for the low incidence of this finding in our study could be possible pre operative exclusion of patients having more than two pervious laparotomies, as the number of laparotomies and the complexity of operation are known to increase post operative adhesion formation[27-28].

Laparoscopy is very sensitive for diagnosis of appendicitis whether acute or chronic. It not only detects appendicitis but also avoids negative appendicectomy[29] In this study 37 patients underwent laparoscopic

appendicectomy. Similarly in females if proper gynaecological pathology is identified by laparoscopy, specific therapy could be instituted soon with great psychological boost to the patient.

There have been no major procedure related complications in most of the studies. Laparoscopy is an invasive procedure and is usually performed under general anaestheisa. Few patients in present series experienced mild side effects of general anaesthesia like nausea and vomiting. But these are negligible in comparison to experience after laparotomy.

All patients were followed up for a period of one month and in majority of patients who had a normal laparoscopic examination, the exclusion of significant disease not only gave peace of mind but also avoided further costly and uncomfortable investigations. Therefore it can be concluded that Laparoscopy is a very safe, quick, cost effective and useful diagnostic tool in undiagnosed abdominal pain, thus decreasing patients' expenses. Laparoscopy should be performed as an early investigative procedure in these patients because "Diagnosis should precede treatment whenever possible" as quoted by Hutchison's Clinical methods.

CONCLUSION

The study has clearly indicated the various abdominal conditions that present with non specific abdominal pain in which diagnosis was not clear at the time of admission. Inflamatory conditions with broad differential diagnosis like appendicitis, cholecystitis, and pelvic pathologies in females of child bearing age like PID can present with nonspecific abdominal pain. Non specific abdominal pain in the elderly can be the first symptom of intra abdominal malignancy and hence can't be ignored and requires a definite diagnosis. Remitting and relapsing symptoms of abdominal pain with obstructive symptoms constitute a large proportion of surgical admissions presenting a diagnostic dilemma. A large number of patients presenting with abdominal trauma underwent negative laparotomies in the past to rule out peritoneal breach or any visceral injury. Laparoscopy was indicated in making a definite diagnosis of these conditions and has proved to be a very effective diagnostic as well as therapeutic tool. Being minimally invasive, laparoscopy has solved the problems of delay in the definite diagnosis, repeated investigations, prolong hospital stay and unsatisfaction of both the surgeon and the patient that were the main issues in the management of these patients.

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