

ORIGINAL ARTICLE

LAPAROSCOPY IN UNEXPLAINED ABDOMINAL PAIN: SURGEON'S PERSPECTIVE

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Background: Unexplained abdominal pain is a common but difficult presenting feature faced by the clinicians. Such patients can undergo a number of investigations with failure to reach any diagnosis. The objective of this study was to evaluate the use of laparoscopy in the diagnosis and management of patients with unexplained abdominal pain. **Methods:** This cross-sectional study was conducted at Pakistan Institute of Medical Sciences Islamabad from January 2009 to December 2013. This study included 91 patients of unexplained abdominal pain not diagnosed by routine clinical examination and investigations. These patients were subjected to diagnostic laparoscopy for evaluation of their conditions and to confirm the diagnosis. These patients presented 43% of patients undergoing investigations for abdominal pain. Patients diagnosed with gynaecological problems were excluded to see surgeon's perspective. The findings and the outcomes of the laparoscopy were recorded and data was analyzed. **Results:** Unexplained abdominal pain is common in females than in males. The most common laparoscopic findings were abdominal tuberculosis followed by appendicitis. Ninety percent patients achieved pain relief after laparoscopic intervention. **Conclusion:** Laparoscopy is both beneficial and safe in majority of patients with unexplained abdominal pain. General surgeons should acquire training and experience in laparoscopic surgery to provide maximum benefit to these difficult patients.

Keywords: Diagnostic laparoscopy, unexplained abdominal pain, abdominal tuberculosis, appendicitis

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INTRODUCTION

Patients with unexplained abdominal pain in whom diagnostic workup is negative, continue to be a challenge to the clinician. Unexplained abdominal pain is a common and difficult presenting complaint faced by the clinicians, both of primary care and specialized care.¹ It leads to a continuous suffering and disability for the patient, both physically and psychologically, especially when it lasts more than six months. It is the leading reason for Gastroenterology referral. Some researchers have divided chronic abdominal pain into four categories, like definite non-gynaecological disease, definite gynaecologic disease, non-organic disease with evidence of an effective disorder and no evidence of organic or psychiatric disease.²

Many common diseases can be the etiological factor for unexplained abdominal pain like reproductive, gastrointestinal, urological, neurological and psychiatric.³ Although patients with this complaint may have undergone multiple diagnostic workups, including surgery, their symptom remains a challenge. Number of non-invasive diagnostic modalities is being used to find the aetiology of such unexplained abdominal pain but diagnosis is still not established in large proportion of cases.⁴ About 40% of patients with unexplained abdominal pain remained without diagnosis after

these highly sensitive and advanced non-invasive investigations.⁵

Introduction of Laparoscopy in modern medical sciences has changed the concept of "exploratory laparotomy in chronic abdominal pain". The safety and effectiveness of laparoscopy in diagnosis of such conditions has been established and it has given the room for therapeutic interventions as well. Laparoscopy is the method used for diagnosis of intra-abdominal diseases by direct inspection of intra-abdominal organs. Laparoscopy can identify abnormal findings and improve the outcome in a majority of patients with unexplained abdominal pain, as it allows the surgeons to see and treat many abdominal conditions that cannot be diagnosed otherwise.⁵ Laparoscopy is the only method of visualizing the pathologic anatomy of abdominal cavity in clinical practice. In Gynaecological practice it has been considered as gold standard investigation, especially in the diagnosis endometriosis, pelvic adhesions and tubal patency.⁴ However the role of laparoscopy is debated by some researchers who consider it controversial and therefore, do not recommend it especially in patients with adhesions presented with abdominal pain.⁶⁻⁸

In the present study, our objective is to evaluate the use of laparoscopy in the diagnosis and management of patients with unexplained abdominal pain.

MATERIAL AND METHODS

This cross-sectional study was conducted in general surgical unit II at Pakistan Institute of Medical Sciences Islamabad from January 2009 to December 2013. In this study period, 213 patients with unexplained vague abdominal pain of more than six months duration presented to general surgery outpatient department. All patients were thoroughly interrogated and examined in detail. This included rectal examination by surgeon and vaginal examination by gynaecologist. Routine investigations were done uniformly in these patients, like complete blood picture, ESR, urine routine examination, blood sugar, blood urea nitrogen & serum creatinine, plain x-ray abdomen, x-ray chest and ultrasonography of abdomen and pelvis. Few patients were subjected to additional investigations as indicated by their specific clinical presentation e.g., stool routine examination & occult blood, upper and lower GI endoscopy, serology for tuberculosis, contrast gastrointestinal studies, ascitic fluid examination, liver function test, intravenous urography, cystoscopy and CT abdomen & pelvis.

Diagnosis was made in 96 patients after routine clinical examination and these above mentioned investigations. Rest of the patients were advised for invasive procedure of laparoscopy for their diagnosis. Out of 117, finally 91 patients were willing and gave consent for laparoscopy. A written consent was taken before inclusion in the study. Patients with unexplained abdominal pain of more than 6 months duration who had normal or inconclusive investigations were included in the study. Patients with previous abdominal surgery, uncorrected coagulopathy, known medical, gynaecological or surgical cause of pain, unfit for laparoscopy due to cardiac or pulmonary conditions, and patients with pregnancy were excluded from the study. Patients who diagnosed with gynaecological problems after laparoscopy were also excluded.

The procedure of laparoscopy was performed with patient in supine position under general anaesthesia. All patients received one gram of cephalosporin as antibiotic prophylaxis. The standard three trocar technique was used with 10 mm optical port at umbilicus and two 5 mm lateral working ports. Additional 5 mm port was placed in few cases according to the type and the site of intervention. The whole abdominal cavity was inspected carefully starting from peritoneal surfaces, liver, gall bladder, anterior surface of stomach, spleen, small bowel up to ileocaecal junction, caecum, appendix, large bowel and rectum. Inner surfaces of abdominal and pelvic walls were closely inspected and any intraperitoneal fluid was aspirated for bacteriological and cytological

examination. In females the gynaecological organs were also inspected and an experienced gynaecologist's consultation was done as per required. After confirming the diagnosis, surgical interventions were made accordingly. Adhesions were released and dissected with the scissors in majority of cases. Electrocautery was used mainly for haemostasis and also as dissections in few cases. Other laparoscopic procedures like appendicectomy, ovarian cyst aspiration or deroofing and biopsies were performed according to the patient's condition. Postoperatively standard diclofenac sodium 75 mg was used for pain relief in all patients. Patients were fortnightly followed up for two months and their assessment regarding abdominal pain was done. The pain was classified as worse, unchanged, less pain and disappearance of pain or no pain. Less pain and no pain/disappearance was referred as positive outcomes, while unchanged and worse pain was referred as negative outcomes. Other outcome measures included diagnosis made, operative time, hospital stay and postoperative complications. All information and results were collected on a designed Performa and data was analyzed on SPSS version 16. Descriptive statistics like frequency, percentage, mean etc were calculated.

RESULTS

The age of patients was ranged between 15 and 58 years with mean age was 37.4 ± 8.90 . The incidence of unexplained abdominal pain is 54% (117 out of 213 patients). This symptom of pain was more common in females 79 (68%) than in males. Of these females 48 were married and rest were unmarried. The mean duration of abdominal pain was 8.1 ± 3.8 months. The most common site of pain is in lower abdomen region (41%) followed by right lower abdominal quadrant (36%) and hypogastrium (12%). Final diagnosis was made in 84 (92.3%) out of 91 patients who had laparoscopy. Eighteen patients had gynaecological problems as shown in table-1.

In 7 out of 73 (9.5%) patients no diagnosis was established. The most common laparoscopic findings in rest of patients were abdominal tuberculosis, appendicitis and adhesions. All laparoscopic findings were confirmed by histopathology except in hernia patients. Abdominal tuberculosis and appendicitis were the most common pathological diagnoses. Three patients underwent laparotomy and resection of small bowel segment for severe intestinal type abdominal tuberculosis. These three patients were those who refused for barium meal follow through or could not get CT scan abdomen because of non-affordability. Another patient required laparotomy for severe pelvic adhesions. This patient denied the vaginal

intervention by local Dai. Diagnoses made on laparoscopy and procedures performed are shown in table-2. The average duration of laparoscopic procedure was 73 minutes and postoperative hospital stay ranged from two to nine days. Among the postoperative complications 5 (5.4%) had fever and chest infection, 4 (4.3%) patients developed wound infection, 2 (2.2%) with fever alone.

Five patients were lost from follow up. Out of 68 patients who came for regular follow up, positive outcome for pain relief was achieved in 61 patients (90%), while negative outcome was noted in 7 patients (10%).

Table-1: Description of patients with gynaecological problems

Laparoscopic diagnoses	No. of patients (n=18)	Percentage	Treatment done
Pelvic inflammatory disease	10	55.6	Biopsy & referred to gynaecology
Endometriosis	6	33.4	Referred to gynaecology
Ovarian cyst	2	11.1	Aspiration & referred to gynaecology

Table 2: Laparoscopic diagnoses and treatment done

Laparoscopic diagnoses	No. of patients (n=73)	Percentage	Treatment done
Abdominal Tuberculosis	23	31.5	Biopsy & anti tuberculosis treatment Laparotomy & Bowel resection ³
Appendicitis	21	28.8	Appendectomy
Adhesions	13	17.8	Adhesiolysis Laparotomy & adhesiolysis ¹
Mesenteric lymphadenitis	3	4.1	Biopsy & conservative treatment
Chronic liver disease	2	2.7	Referred to gastroenterology
Hernia	2	2.7	Laparoscopic hernioplasty
Abnormal gall bladder	2	2.7	Cholecystectomy
Normal study	7	9.6	Observation

DISCUSSION

Laparoscopy in unexplained chronic abdominal pain is safe and reliable tool for diagnosis and is helpful in avoiding un-necessary investigations and medications. Our study of 73 cases revealed positive laparoscopy in 66 (90%) of cases. It is consistent with the literature published nationally and internationally.^{1,9-11} Seventy-six percent laparoscopic studies in chronic abdominal pain were positive in study by Kontoravdiset and his colleagues.¹² High percentage of positive laparoscopies, as depicted in our study and other local and international literature has proved the useful role of laparoscopy in management of unexplained pain abdomen.

Abdominal tuberculosis was the most frequent pathology detected in our study. Peritoneal tuberculosis is difficult as size of the tubercles is usually less than 5 mm, which are not detected on ultrasonography or CT scan. Laparoscopy provides specimen for definite histopathological diagnosis. Rodriquez de Lope *et al.* diagnosed 14 cases of tubercular ascites with the help of peritoneal biopsy.¹³ We diagnosed 23 cases of abdominal tuberculosis with laparoscopy. Out of these, 20 had peritoneal tuberculosis while three patients had intestinal tuberculosis who underwent resection of bowel. Laparoscopy confirmed the diagnosis with the help of gross appearance or peritoneal biopsy.¹⁴ According to WHO reports, there is high incidence of tuberculosis in developing countries which was reflected in regional studies.^{15,16} Study by Samina *et al* revealed tuberculosis in 26.98% of cases, pelvic inflammatory disease 20.63%, endometriosis 14.28%, adhesions 9.52% and ovarian cysts 7.93%.¹⁷

Appendicitis was the cause of unexplained pain in 21 (28.8%) patients in our study. Most of them had chronic variant of appendicitis that is difficult to diagnose by routine investigations.¹⁸ All the patients reported cure of pain after laparoscopic appendectomy. Literature view has shown frequency of chronic appendicitis in patients with chronic abdomen pain from 2.7–15.7% with improvement in pain after appendectomy in up to 95% of patients.¹⁹⁻²²

In patients where adhesions are a suspected cause of abdominal pain, surgical exploration is the only way to confirm their presence.²³ Adhesions cause abdominal pain because they restrict the movement of abdominal organs especially gut.²⁴ An Indian study described adhesions as the most common cause of chronic abdomen pain, which was in 30% of cases. Literature also showed frequency of detected adhesions on laparoscopy from 18–31.5%.^{25,26} Laparoscopy has become the least invasive way of diagnosing the presence of adhesions. Adhesiolysis were done laparoscopically in 12 (16.4%) patients in our study with good results. One patient underwent laparotomy because of severe pelvic adhesions and adhesiolysis was done.

Inguinal, femoral, and sciatic hernias can all be identified and treated during laparoscopy. In a small study of 20 patients with sciatic hernias, Miklos *et al* showed that laparoscopic surgical repair could result in significant symptom relief.²⁷ Hernias should always be included in the differential diagnosis of unexplained abdominal pain, and laparoscopy is a very useful tool in the diagnosis and treatment of hernias associated with pain. We diagnosed and treated successfully two patients of inguinal hernia with laparoscopy in our study.

Numbers of other abdominal pathologies are described for the cause of unexplained abdominal pain in literature. We detected the following other

pathologies in our study, mesenteric lymphadenitis (4.1%), chronic liver disease (2.7%), and abnormal gall bladder (2.7%). All these pathologies were dealt accordingly with favourable results.

Sixty one (90%) patients have achieved positive outcome regarding pain relief. Fifty-six (92%) reported complete relief of pain and 5 (8%) reported reduction in pain; while 7 out of 68 (10%) patients reported negative outcome with no improvement in pain. Di Lorenzo has reported pain relief in 60.2% of cases, pain reduction in 23.1% and no improvement in 16.7% of patients.²⁶

CONCLUSION

Laparoscopy is both beneficial and safe in majority of patients with unexplained abdominal pain and it should be employed both as diagnostic and therapeutic tool, where the diagnostic dilemma exists. General surgeons should acquire training and experience in laparoscopic surgery to provide maximum benefit to these difficult patients.

Conflict of interest: None

AUTHORS' CONTRIBUTION

MTA: Literature search, Data collection, data interpretation. SHW: Conceptualization of idea and study design, literature search, write-up. MAZ: Proof reading

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