

Original Article

Role of Diagnostic Laparoscopy in Chronic Abdominal Pain

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Background: In routine surgical practice there are a lot of cases of abdominal pain in which definite diagnosis is not possible despite multiple investigations. In many cases laparotomy is the only alternative where it proves to be an important tool for accurate diagnosis and management. The aim of this study was to evaluate and establish the role of diagnostic laparoscopy for chronic abdominal pain.

Material and Methods: In this prospective study patients with abdominal pain of more than 3 months duration, coming to surgical OPD of Shalamar Hospital, Lahore, over a period of 3 years were considered for diagnostic laparoscopy if diagnosis was not possible with conventional methods. Diagnostic laparoscopy was performed in 80 patients by one surgeon and disease was also treated laparoscopically where possible. The correlation between preoperative, laparoscopic and pathological diagnosis was also assessed.

Results: Laparoscopy yielded positive findings in 78 (97.5%) cases. Abdominal Tuberculosis 43.75% (n=35), Recurrent Appendicitis 26.25% (n=21) and Postoperative Intra-abdominal adhesions 17.5% (n=14) were major finding, although metastatic adenocarcinoma 7.5% (n=6), Ileoileocolic intussusception 1.25% (n=1) and retroperitoneal masses 1.25% (n=1) were also found. Therapeutic procedures were performed in 36 patients (laparoscopically in 35). Laparoscopic biopsies were taken in cases of abdominal Tuberculosis and malignancies. So the patients who remained undiagnosed by routine investigations were not only diagnosed but also treated laparoscopically where possible.

Conclusion: Laparoscopy is a useful diagnostic tool in cases of chronic abdominal pain where other investigations fail to diagnose.

Key Words: Abdominal pain, Diagnostic Laparoscopy, Laparoscopy.

Introduction

Many surgeons worldwide have had the challenging experience of facing an unexplainable abdominal pain and uncertain diagnosis. History, clinical examination, laboratory tests and sequences of advanced non-invasive imaging studies might provide some help, but are often insufficient for accurate diagnosis.¹ Nevertheless, exploratory laparotomy has inevitably been undertaken for those who have no definite diagnosis. Moreover laparotomy increases the morbidity and mortality of those patients with low reserve of organ functions.² So laparoscopy is the one option which is less invasive and more accurate for diagnosis of chronic abdominal pain. One additional benefit of laparoscopy is that in some cases therapeutic procedures can be performed if needed like Appendicectomy and Adhesionolysis.

Laparoscopy has not been widely applied until the advent of laparoscopic cholecystectomy.³⁻⁶ Nowadays laparoscopy is being used not only for therapeutic purposes but also for diagnostic

purposes. The first laparoscopic examination was performed by Ott, a Russian gynaecologist at the beginning of this century. In 1923 Kelling successfully observed the intraperitoneal organs of a Dog with a cystoscope, and described the technique as "Coelioskope". Laparoscopy, first described by Jacobaeus, led to clinical experience of 100 patients to diagnose hepatic cirrhosis, intra-abdominal tumors and so on.⁷ With the development in technique and instruments of laparoscopy, the indications of diagnostic laparoscopy are increasing.

The aim of this study was to evaluate and establish the role of diagnostic laparoscopy in unexplained chronic abdominal pain where exact diagnosis remains unclear in spite of traditional investigations.

Material and Methods

In this prospective study a total of 78 patients with abdominal pain of more than 3 months' duration were included who presented at Surgical OPD of Shalamar Hospital, Lahore between January 2005 to December 2007 (3 years). There were 50 female and

interviewed and examined. Following investigations were routinely performed to diagnose the disease.

- ◆ Routine Blood tests
- ◆ Chest X-rays.
- ◆ X-ray plain film abdomen.
- ◆ Ultrasound abdomen
- ◆ CT scan \Biopsy
- ◆ Ascitic tap \cytology \culture & sensitivity.

Criteria for Diagnostic Laparoscopy

Inclusion Criteria:

All patients with abdominal pain for at least 3 months duration;

- ◆ Having normal or inconclusive investigations.
- ◆ Having mass abdomen.
- ◆ Having ascites.

Exclusion Criteria:

- ◆ Patients having known medical, surgical or gynaecological cause.
- ◆ Uncorrectable coagulopathy.
- ◆ Patients undergoing some elective abdominal procedure.
- ◆ Severely decompensated cardiorespiratory system.

All diagnostic laparoscopies were carried out by one surgeon under general anaesthesia. Pneumo-peritoneum was created with CO₂ by Verrese needle. In brief the Video-optic port was set intra or supra umbilically with a 10 mm trocar depending upon the pathology suspected. The other two were passed in right or left half of abdomen depending upon the pathology found. Whole of the small and large bowel, appendix, omentum, liver, spleen, pelvic

organs including uterus, both tubes and ovaries in females were routinely examined. Any fluid or pus present in pelvis was aspirated for cytology, biochemistry and culture. Omental, peritoneal or biopsy from mass was taken laparoscopically. In some cases pathology was dealt laparoscopically like appendectomy or adhesionolysis.

Patients were assessed postoperatively for relief of their symptoms after 6 months.

Results

80 patients with abdominal pain for more than 3 months duration underwent diagnostic laparoscopy. There were 50 females and 30 males with age range of 15 to 70 years. Average duration of procedure was 45 minutes and average hospital stay was 2.5 days.

Laparoscopic findings were considered positive if the pathological lesion could be related to patient's symptoms. Moreover, follow up of patients was done after 6 months and almost all those patients who underwent therapeutic procedures remained symptom free.

Out of 80 cases of diagnostic laparoscopy, 78 were positive and 2 patients who were females had no organic cause. 35 patients were found to have tuberculous, 11 of these patients were having ascites. Peritoneal and omental biopsies were taken and their histopathology confirmed the diagnosis but ascitic fluid ZN staining was negative in all these cases. 21 patients were having recurrent appendicitis and they remained symptom free after appendectomy on 6 months followup. 14 patients of chronic abdominal pain were having postoperative intra abdominal adhesions especially after appendectomy. These adhesions were between gut and abdominal wall and on releasing these adhesions patients improved

Table-1: Diagnostic and Therapeutic Procedures Performed Laparoscopically

Disease	Number	Percentage	Procedure performed
Tuberculous abdomen without ascites	24	30%	Laparoscopic biopsy
Tuberculous abdomen with ascites	11	13.75%	Laparoscopic biopsy
Recurrent appendicitis	21	26.25%	Laparoscopic appendectomy
Post-operative abdominal adhesions	14	17.5%	Laparoscopic adhesionolysis
Metastatic adenocarcinoma	06	7.5%	Laparoscopic biopsy
Retro-peritoneal mass	01	1.25%	Laparoscopic biopsy
Ileoileocaecal intussusception	01	1.25%	Laparoscopic assisted laparotomy
No pathology	02	2.5%	
Total	80	97.5% Positive	

adenocarcinoma mostly of colonic origin. There was one case of retro-peritoneal mass; biopsy proved Ewing's Sarcoma. One case was of ileoileocaecal intussusception, in which laparoscopic assisted resection and anastomosis was done and patient recovered well.

Discussion

This study has evaluated the usefulness of laparoscopy in diagnosis and treatment of chronic abdominal pain. There is consensus that laparoscopic diagnosis is useful for those with unexplained abdominal pain.⁸⁻¹¹ Before the era of therapeutic laparoscopy these patients used to undergo a battery of costly investigations over a period of months, while remaining dissatisfied.¹² Lot of studies have been done on diagnostic laparoscopy with positive results ranging from 47% to 90%.¹²⁻¹⁶ Easter et al had 47% positivity with post operative adhesions being the main finding. Arya Praful K had positive findings in 90% cases where abdominal Tuberculosis was the main diagnosis.¹² Similarly a study conducted in Saudi Arabia had 71% positivity with more cases of abdominal Tuberculosis.¹ We could not find any abdominal pathology in 2 cases of our study, with diagnostic rate of 97.5% which is better than other studies. This might be due to better patient selection and clinical diagnosis.

Abdominal Tuberculosis is common in Pakistan as was also seen in this study and laparoscopy helped in its early diagnosis. Common findings in abdominal Tuberculosis are peritoneal and visceral tubercles varying from 2 mm to 1 cm. Small bowel strictures and adhesions were also commonly seen. Recurrent appendicitis was also another common finding in this study. Laparoscopy not only detects appendicitis

but also avoids negative appendicectomies.^{13,18-20} In this study all 21 appendicectomies had positive histopathology.

Laparoscopy is also a useful tool for staging and exclusion of malignancy. In many cases it is even more effective investigation than CT scan and MRI. As we can take biopsy under vision, histological diagnosis is possible in all patients. During laparoscopy thorough visualization of peritoneal cavity is possible and increased magnification improves visualization. Negative laparoscopy also excludes major abdominal diseases like malignancy and tuberculosis and in this way avoids multiple unnecessary costly and uncomfortable investigations. In this study patients who were diagnosed and treated laparoscopically remained symptom free especially after appendicectomy and adhesionolysis.

Therefore it can be concluded that laparoscopy is a very safe, quick, cost effective and useful diagnostic tool in undiagnosed abdominal pain. Laparoscopy shortens hospital stay and minimizes hospital visits thus decreases patient expenses. Diagnostic laparoscopy should be performed in cases of abdominal pain of more than 3 months duration in which routine serological and radiological tests have failed to diagnose the disease.

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References

- 1- Al Akeely MH. The impact of elective diagnostic laparoscopy in chronic abdominal disorders. *Saudi J Gastroenterol* 2006; 12 (1):27-30.
- 2- Shi-Yau, Jen-Hwey Chiu, Che-Chuan Loong. Diagnostic Laparoscopy: Indications and benefit. *Chin Med J (Taipei)* 1997;59: 158-63.
- 3- Berci G, Shore JM, Panish J. The evaluation of a new peritoneoscope as a diagnostic aid to surgeon. *Ann Surg* 1973; 178:37-44.
- 4- Cuschieri A, Hall AW, Clark J. Value of laparoscopy in diagnosis and management of pancreatic carcinomas. *Gut* 1978;19:672-7.
- 5- Sugarbaker PH, Wilson RE. Using Celioscope to determine stages of intra abdominal malignant neoplasm. *Arch Surg* 1976; 111: 41-4.
- 6- Warshaw AL, Tepper JE, Shipley WH. Laparoscopy in the staging and planning of therapy for pancreatic cancer. *Am J Surg* 1986; 151: 76-80.
- 7- Gunning JE. The history of laparoscopy. *J Reprod ME* 1974; 12: 223-31.
- 8- Peter S, Rudof W, Wolfgong UW, Roman R, Herwig S. Diagnostic laparoscopy: A Survey of 92 patients. *Laparoscopy* 1994; 168: 348-51.

9. David WE, Aifred C, Leslie KN, Michael LJ. The utility of diagnostic laparoscopy for abdominal disorders: audit of 120 patients. Arch Surg 1992; 127:379-83.
10. Alexander GN, Shimi SM, David J. Diagnostic Laparoscopy. Am J Surg 1989; 157:490-3.
11. Velpen GCV, Shimi SM, Cuschieri A. Diagnostic yield and management benefit of laparoscopy: a prospective audit. Gut 1994; 35:1617-21.
- 12- Arya Prafull K, Gawr K JBS. Laparoscopy: A tool in diagnosis of lower abdominal pain. Ind J Surgery; 2004; 66: 216-220.
- 13- Easter DW, Cuschieri A, Nathanson LK. The utility of diagnostic laparoscopy for abdominal disorders. Audit of 120 patients. Arch Surg 1992; 127:4.
- 14- Onders RP, Mittendorf EA. Utility of Laparoscopy in Chronic Abdominal Pain. Surgery; June 2008; 134 (4): 549-52.
- 15- Klingensmith ME, Soybel DI, Brooks DC. Laparoscopy for Chronic Abdominal Pain. Surgical Endoscopy 1996;10: 1085-1087.
- 16- Salky B. Diagnostic laparoscopy. Surg Laparosc & Endos 1993; 132-4.
- 17- Paaianen, Hannu, Julkumen, Kristina, Waris, Heidi. Laparoscopy in chronic abdominal pain: A prospective non randomized long term follow up study. J Clin Gastroenterol 2005;39(2):110-114.
- 18- Leape LL, Ramenofsky ML. Laparoscopy for questionable appendicitis. Can it reduce the negative appendectomy rate? Ann Surg 1980; 191: 410-3.
- 19- Jadallah FA, Ghani A, Tibblins. Diagnostic Laparoscopy reduces unnecessary appendectomy in fertile women. Eur J Surg 1994; 160: 41-5.
- 10- Connor IJ, Garcha IS, Ramshaw BJ, Mitchell CW, Wilson JP, Mason EM. Diagnostic laparoscopy for suspected