ORIGINAL ARTICLE

Laparoscopy as A Diagnostic Tool In Elective Surgery: A Sir Ganga Ram Hospital Experience

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ABSTRACT

Objectives: This study was designed to evaluate the role of laparoscopy as a diagnostic tool in elective general surgical patients with obscure abdominal conditions. The preoperative working diagnosis was compared with the findings of diagnostic laparoscopy and the value of this modality was assessed in terms of its benefits and applicability.

Study Design: A prospective randomized study

Place and Duration of Study: Department of Surgery, Fatima Jinnah Medical College and Sir Ganga Ram Hospital Lahore. From July, 2009 to July, 2011.

Subject / Methods: The study includes 60 patients that presented to the surgical outpatient department of Sir Ganga Ram Hospital with obscure abdominal conditions. These patients after thorough examination and provisional diagnosis were subjected to diagnostic laparoscopy under general anesthesia.

Results: In all of the 60 patients included in the study the laparoscopy was successfully performed. The overall diagnostic accuracy of laparoscopy was 81.66 percent. In 65% of patients an unnecessary laparotomy was avoided. In about 16(26.6%) patients a decision in favor of a useful laparotomy was made. In 26(43.33%) patients laparoscopy helped in altering the course of management. The overall diagnostic efficacy turned out to be 86.6 percent.

Conclusion: In this study it was concluded that laparoscopy is of great help in establishing the definitive diagnosis by inspection alone, or combined with biopsy. Laparoscopy is a reliable, safe and simple diagnostic procedure. The study proves that laparoscopy gave us larger latitude for decision making, wherever the diagnostic dilemma arose and it helps in avoiding unnecessary surgery or delay in surgery.

Key Words: Diagnostic Laparoscopy

INTRODUCTION

Since the inception of laparoscopy in the armamentaria of general surgeons, the use of this modality is frequently being used as a diagnostic tool in the evaluation of obscure abdominal conditions.[1] Due to the advancement in the techniques and technology a large number of General Surgeons are getting convinced for its use both in diagnostic and therapeutic surgery. The marked development in the field of optics and video endoscopic system has markedly improved the resolution and clarity of the laparoscopic view[1]. The video imaging, that amplifies the images by 10-15 times, has allowed the safe, simple and wide use of laparoscope.[2,3] This study was carried out in Sir Ganga Ram Hospital Lahore. The purpose of this was to evaluate the role of diagnostic laparoscopy elective general surgical cases. The study examined the value of laparoscopy by comparing the pre-operative decision of the surgery with laparoscopic results to find out the benefits of laparoscopy.

MATERIALS AND METHODS

This prospective study includes 60 patients undergoing elective diagnostic laparoscopy during a period of two year from July, 2009 to July, 2011. Patients above the age of 15 years presenting with equivocal signs and symptoms of chronic obscure abdominal conditions were included in this study. Patients with unacceptable anesthetic risk or having major bleeding disorder were not included in the study. Previous major abdominal surgery was also in the exclusion criteria. Before subjecting to laparoscopy patients was evaluated by the baseline blood and urine examination. The abdominal ultrasound, abdominal radiographs, chest X-ray and E.C.G were performed if indicated. Any further investigations were done as and when required to establish the diagnosis or fitness of the patient for operation and anesthesia. All the

patients were given peri-operative antibiotics usually a first generation cephalosporin. Equipment used was laparoscope its accessories and necessary laparoscopic instruments.

Technique

The procedure was performed in supine position under general anaesthesia with endotracheal intubation. All patients were prepared and draped as for routine laparotomy. After placing the patient in supine position and pneumoperitonium was established with cabondioxide. After maintaining the intra-abdominal pressure between 12-15 mmHg the 11mm trocar cannula was inserted infraumbilically for optical port. The abdomen was then surveyed with a 0-degree telescope. After the inspection of peritoneal cavity the decision about the insertion of additional trocars and also the site of insertion was made accordingly. The procedure was facilitated by changing the position of operation table. In every patient it was tried that procedure should proceed in a systematic way. First the ligamentum teres and the attached falciform ligament were identified and then right lobe of the liver and gallbladder were inspected. Then telescope was passed above the liver to inspect the diaphragmatic and parietal peritoneum. Next step was the inspection of the left hepatic lobe, spleen, anterior surface of stomach and the transverse colon. Usually the anterior surface of stomach and spleen were covered with the omentum. Their inspection was aided by tilting the patient, usually into the reversed Trendelenberg (head up) position and by using the palpation probe through a second portal. Similarly atraumatic grasping forceps were sometimes used for lifting the omentum. The small bowel was examined in the supine position by revealing the loops of intestine with the help of atraumatic grasping forceps. For the visualization of caecum, appendix and pelvic viscera, the patient was placed in the Trendelenberg (head down) position. The biopsy procedures were performed either with biopsy forceps under the laparoscopic surveillance.

This systematic laparoscopic examination was not possible in every case. The examination was deferred in those cases where the diagnosis was obvious and the decision in favor of exploration was made. Similarly, when the intention was only to evaluate and biopsy a particular organ the protocol of systematic examination was not followed.

RESULTS

The evaluation diagnostic laparoscopy was made on the basis of results obtained in 60 patients. In all patients the laparoscopy was successfully performed without any technical error. The mean age was 38.+16 SD (range12-60) years. Among the 60 patients thirty-nine (65%) were females while twenty-one (35%) were males. The detail of overall results depicting diagnostic accuracy and cases in which laparotomy avoided are shown in Table I. The overall diagnostic accuracy of laparoscopy turned out to be 81.66 percent as in 44 out of 60 patients a positive diagnosis was reached. In 44(73.3%) patients out of 60 unnecessary explorations was avoided. Therefore these patients escaped the hazards of non-therapeutic laparotomy (Table 1).

The diagnostic laparoscopy was helpful in altering the course of management in these patients. The different indications for diagnostic laparoscopy are also shown in Table II. Breakup of the patients conditions in which laparotomy was avoided is shown in Table 4. There was no incidence of major complications like, viscous perforation, hemorrhage or air embolism. However, minor complications such as chest infection, UTI and wound infection did happen. These were observed in only 4(6.66%) patients. The average operating time in our study was 45 minutes with a range of 18-95 minutes. The laparoscopic time in those cases in which laparotomy was avoided was comparatively less.

Table 1: Overall results of Diagnostic Laparoscopy (n=60)

Indications	n=	Diagnostic Accuracy		Laparotomy Avoided	
Generalized vague abdominal pain	22	18	81.82%	16	72.72%
Lower abdominal pain	14	12	85.71%	13	92.85%
Right Iliac Fossa mass	09	09	100%	05	55.55%
Abdominal Tumors	15	10	66.66%	07	70.00%
Overall Results	60	49	81.66%	39	65.00%

Table 2: Break up of 60 cases of Diagnostic Laparoscopy

Indications	n	Laparoscopic Findings	N
Generalized vague abdominal pain	22	Abdominal tuberculosis No abnormality detected Adhesive bowel disease Diverticulosis	09 06 06 01
Chronic lower abdominal pain	14	Pelvic inflammatory disease Adenexal tuberculosis Adhesive bowel disease Simple cyst fallopian tube No abnormality detected	06 03 02 01 02
Ileocaecal Mass	09	Ileocaecal tuberculosis Chronic recurrent appendicitis Ca. Caecum	05 02 02
Abdominal tumors	15	Carcinoma of gall bladder Hepatoma Carcinoma of colon Liver Secondaries	06 03 03 03

Table 3: Conditions in which laparotomy was avoided

Elective Indications	Laparoscopic findings	n=
Ileocaecal mass	Ileocaecal tuberculosis	05
Non-specific lower abdominal pain	Pelvic inflamatory disease No Abnormality Detected Adenexal Tuberculosis	06 02 03
Abdominal Tumor	Carcinoma of gall bladder Liver Secondaries Hepatoma	04 03 03
Non-specific generalized abdominal pain	Abdominal tuberculosis No abnormality detected Adhesive bowel disease Diverticulosis	09 06 02 01
Total cases in laparotomy was avoided		**44(73.3%)**

Table 4: Results of laparoscopy in 60 cases

Results	n=	%age
Successfully performed	60	100
Diagnostic efficacy	52	86.6
Avoided unnecessary laparotomy	44	73.3
Decided for a useful laparotomy	16	26.6
Findings missed	04	6.66
Altered the course of management	26	43.33

DISCUSSION

Most series on laparoscopy demonstrate the value of laparoscopy as a diagnostic aid and despite advances in imaging technology, fine needle biopsies and other diagnostic procedures, laparoscopy is gaining an important place in the diagnosis of obscure abdominal conditions.[4, 5, 6, 7] This study evaluates the role laparoscopy in avoiding unnecessary surgery and its value in decision making in a variety of elective abdominal conditions. Currently, the role of diagnostic laparoscopy in elective cases is being evaluated as an adjunct to many other sophisticated diagnostic modalities. Our study demonstrated a diagnostic accuracy rate of about 81.66%. Approximately 65 percent patients were spared of unnecessary laparotomy that is a quite higher figure as compared to 35% avoidance of laparotomy in the study of Uzair and Oonwalla[5]. The better selection of patients and less number of

cases are probably the reasons for this comparatively higher accuracy rate.

Laparoscopy plays an important role in the assessment and management of abdominal malignancies[4,13]. The assessment of the operability and staging of an abdominal tumor is of prime importance before subjecting the patients to laparotomy for resection of the tumor. Laparoscopy is very helpful in decision making for the management of ill-defined abdominal tumors especially its role become more significant when sophisticated diagnostic facilities like CT scan and MRI are not easily available to assess the stage and operability of the tumor. In our study laparoscopy remained conclusive in 5 out of 6 cases of abdominal tumors. Although all the cases were diagnosed on ultrasonography and CT scan, but the confirmation of diagnosis and their operability was only finalized at laparoscopy. In the study of Schrenk-P in 66 of 72 patients (91.7%) a diagnosis was possible laparoscopically and in 53 patients (73.6%) a laparotomy was avoided and they recommended the use of laparoscopy in complementary to other non-invasive imaging methods[4]. However Pelton-JJ in his study raises the question and showed reservation in the routine use of diagnostic laparoscopy in staging tumors[13].

We found laparoscopy a very sensitive tool in detecting an intra-peritoneal lesion, such as peritoneal tuberculosis. Therefore, our study supports the view of Cusheiri, that``----for the diagnosis of abdominal tuberculosis even in endemic areas the best procedure is laparoscopy with peritoneal target biopsy[8].

In the evaluation of chronic abdominal pain, the role of laparoscopy was satisfactory. In only four out of our 22 cases of chronic abdominal pain laparoscopy remained inconclusive with diagnostic accuracy rate was about 81.8%. Moreover, the conditions in which there were multiple intra-abdominal adhesions posed great difficulty during laparoscopy especially in abdominal tuberculosis with interloop adhesions and PID with frozen pelvis[10,12]. Other studies also report low applicability and success of laparoscopy in patients with chronic abdominal pain[11.]

In our study although there was no incidence of any major complication, but we did face some minor complications that were primarily related one each to anesthesia and bladder catheterization and two were as a result of procedure itself. These complications, related directly or indirectly to the procedure added very little to the morbidity of the operated patients. Major complication rate in larger series is reported to be 0.22%, most of which were due to initial trocar insertion rather than the actual procedures[14,15,16,17.] The knowledge about the laparoscopic instruments is critical since the procedure may be significantly compromised if equipment failure occurs. A thorough working knowledge about the instruments assembly and their function allows the operator to work much faster and more satisfactorily. The average procedural time consumed in this study was higher compared to some other studies[9]. However, the duration of laparoscopy alone was significantly low in cases in which laparotomy was avoided.

CONCLUSION

After thorough evaluation of the results of this study it is concluded that laparoscopy is a safe and effective diagnostic procedure and it should be employed more frequently in routine obscure abdominal surgical conditions. On the basis of our experience we have found that laparoscopy gives larger latitude of decision making as compared to other diagnostic modalities.

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