

A Prospective Observational Study Evaluating the Role of Laparoscopy in Cases of Acute Abdomen under Emergency Conditions

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ABSTRACT

Introduction: Laparoscopic examination can be used to recognize the causative pathology of acute abdominal pain. This surgery is also allow to treatment of many intra-abdominal disorders.

Aim: The aim of the study was role of laparoscopy in emergency abdominal surgery.

Methods: This study was conducted in Department of Surgery, Muzaffarnagar Medical College, Muzaffarnagar from January 2017-December 2017 year in over a period of one year. Required investigations were done before the surgical intervention. Performa were collected in which diagnosis, informed consent, patient's bio data, findings, procedure, complications mentioned.

Results: Total 100 patients were come in this study. Among the 100 patients 34 patients were for diagnostic laparoscopies and 66 for laparoscopies appendectomies. In 66 patients, 24 were with grade 2 appendicitis and 42 patients were with grade 3 appendicitis.

Conclusion: We conclude in our study, due to diagnostic and therapeutic advantages, laparoscopic surgery is useful for the majority of conditions.

Keywords: Emergency, Abdominal Surgery, Laparoscopic Examination, Abdominal Pain.

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INTRODUCTION

Abdomen can be considered as Pandora's box, and it is specially required in emergency set up. The patients who have acute abdomen in emergency situation are often difficult to assess especially critically ill and poly trauma patients. Conventional modalities of examination like ultrasound (US)/ computerized tomography (CT)/ diagnostic peritoneal lavage (DPL) are associated with false positive and negative results and often they are equivocal.

Error may be occur in the assessment of abdomen it lead to a delay either in the diagnosis, with disastrous consequence to patients, or unnecessary laparotomy, which was painful and related with morbidity rate of 5-22%.^{1,2} It is a minimally invasive tool which can accurately and quickly confirms the diagnosis and decreases both delay in diagnosis and non- therapeutic laparotomy (NTL) rate. Above all this improvement in the technology and skills, there is an increasing potential for carrying out therapeutic procedure at the same sitting.

It may be considered in acute abdomen for following reasons.

- Diagnosis
 - Diagnosis and treatment
 - Treatment
 - To determine the best incision just before laparotomy
- Laparoscopic surgery was introduced in 1980s for the context of general surgery by the laparoscope. This may led to the minimal scar marks, lesser number of wound infections, and reduction in post-operative pain, hospitalization and early return to work.³ It was started from diagnostic gynaecological examinations and was shortly adopted by the general surgeons who took the charge started with cholecystectomies, then hysterectomies.⁴ After that it entered into the new horizon of appendectomies, colorectal surgeries and upper GI interventions for stomach and esophagus.^{5,6} Firstly Laparoscope was limited to the elective operation theatres but as the time passed, the experience and exposure of the surgeons also expanded.⁷ In the recent days

advanced laparoscopic surgical procedures for both general surgery as well as Bariatric surgery are being done.⁸ Surgeons was led to step forward to start laparoscopic interventions in emergency operation theatres for emergency procedures like acute appendicitis, perforated duodenal ulcers and ruptured ectopic pregnancies and ruptured ovarian cysts.⁹ At the similar time laparoscopic diagnostic examination started to take place for sub-acute intestinal obstructions, abdominal tuberculosis, acute pancreatitis, mesenteric ischemia, blunt abdominal traumas etc.

LAPAROSCOPY IN INTENSIVE CARE UNIT (ICU) PATIENTS

Unfavorably ill patients are at an higher risk of developing a number of acute abdominal pathologies, like acalculous /calculous cholecystitis, bowel perforation, intestinal ischaemia, pancreatitis, intestinal obstruction, intra-abdominal haemorrhage. These types of patients are usually ventilated with multiple organ pathologies, and very difficult to assess, especially after equivocal results of conventional diagnostic modalities. It may lead to either unacceptable delay in diagnosis or results in NTL with increased illness and death.

MATERIALS AND METHODS

Study Area

This study was conducted in Department of Surgery Muzaffarnagar Medical College, Muzaffarnagar from January 2017-December 2017 year in over a period of one year.

Study Population

100 patients were taken for this study, patients who presented in surgical emergency of LGH were provisional diagnosed with either localized or diffuse peritonitis was included in our study. All the essential investigations were done before the surgical intervention. After the diagnosis, informed consent was taken. All the required information's like Patient's bio data, findings, procedure, complications and management with results were entered in a Performa.

Table 1: Procedure of Laparoscopy

LAPROSCOPIC PROCEDURE	
Diagnostic Laparoscopies	34
Laparoscopic appendectomies	66
TOTAL	100

Table 2: Grading of appendectomies

Laparoscopic appendectomies	
Grade 2 appendicitis	24
Grade 3 appendicitis	42
TOTAL	66

Table 3: Diagnosis among the Diagnostic Laparoscopic patients

Diagnosis	
Tuberculous abdomen	6
Sealed adhesive enteric perforations	2
Blunt abdominal trauma with liver injury	2
Right ruptured ectopic pregnancy	2
Uterine perforation	2
Perforated appendix	4
Penetrating abdominal injury	16
TOTAL	34

Table 4: Diagnostic Laparoscopic patients proceed with procedure

Procedure	
Midline abdominal incision rest	14
Managed laparoscopically	20
TOTAL	34

Table 5: Summarization of results

Diagnosis	Diagnostic role	Therapeutic Intervention	Hospital stay	Post op pain	Return to work	Scar mark
Blunt/Stab Abd Injuries	Visceral Injury/preperitoneal breech	Laparoscopic management/ Exploration/ no exploration	5 days	8	30 days	Laparotomy scar
Intestinal Obstruction	Sealed multiple ileal perforations adherent in pelvis/Strictures/ Bands/DUP/ Mesenteric Ischemia	Laparoscopic/ Laparotomy	7 days	8	22 days	Midline scar
Acute appendicitis	More in females	Lap Appendectomy	6-8 HRS	6	5 days	Good
Perforated appendix	More in females	Lap appendectomy	2 days	4-6	7 days	Good
SAIO	Intestinal TB/adhesions	Omental biopsy n ascetic tap	5 days	4		Good
Ruptured ectopic pregnancy	Confirmation of the ruptured tube	Laparoscopic intervention	6 hrs	4	8 days	Good

RESULTS

Total 100 patients were come in this study. Among the 100 patients 34 patients were for diagnostic laparoscopies and 66 for laparoscopies appendectomies. In 66 patients, 24 were with grade 2 appendicitis and 42 patients were with grade 3 appendicitis. Diagnostic Laparoscopy was performed in 34 out of 100 patients. 6 Patients were by tuberculous abdomen, 2 with sealed adhesive enteric perforations, 2 blunt abdominal trauma with liver injury, 2 by right ruptured ectopic pregnancy, 2 was via uterine perforation, 4 were by perforated appendix and with penetrating abdominal injury were 16. From the 34 patients, 14 were continued with midline abdominal incision rests 20 were proceed laparoscopically.

DISCUSSION

Laparoscope is the helping tools for the surgeons in Emergency Operation Theatre which a lot in making their decisions regarding patient exploration, morbidity, hospital stay, post-operative pain, wound infection etc. Diagnostic as well as therapeutic procedures both were done in emergency operation theatre. Out of 100 (100%) patients, Laparoscopic appendectomies were performed in 66 (66%) patients whereas 34(34%) patients went under the diagnostic laparoscopies.

In Leppaniemi A and Haapiainen R showed in his study regarding Diagnostic laparoscopy in abdominal stab wounds in 2003 and established that diagnostic laparoscopy has advantage over exploratory laparotomy for better patient care. In our study amongst the patients with acute appendicitis 66 (100%), 24 (36%) were with grade 4 appendicitis and 42 patients (64%) were with grade 6 appendicitis.⁹

From the 100 patients Diagnostic Laparoscopy was performed in 34 (34%) in which 6 (6%) Patients were suffered with tuberculous abdomen, 2 (2%) suffered with sealed adhesive enteric perforations, 2 (2%) patients suffered blunt abdominal trauma with liver injury, 2 (2%) patients with right ruptured ectopic pregnancy, 2 (2%) patients were by uterine perforation, 4 (4%) patients were by perforated appendix, 16 (16%) showed with penetrating abdominal injury. From the 34 (100%) patients, 14(41%) were continued with midline abdominal incision rest 20(%) were proceeded laparoscopically. In another study conducted regarding Emergency laparoscopy in 1991 and claimed that emergency laparoscopy helped the patients as well as surgeon for patient morbidity.⁷ Similarly In another studies published that in different journal regarding introduction of Diagnostic as well as Therapeutic Laparoscopy in Emergency Operation theatres.³⁻⁶

Sugarbaker et al. has shown in his study way back in 1975 that laparoscopy in acute abdominal pain has a diagnostic accuracy of 96% and on the other hand patients who underwent laparotomy with a "Confident pre-operative diagnosis" of acute abdomen were found to have negative laparotomy rate of 22%.¹⁰ Salky BA also reported his experience of laparoscopy in acute and chronic abdominal pain with a diagnostic accuracy rate of 98% and 76% respectively.¹¹

In acute abdominal pain therapeutic laparoscopy was performed in 44% cases. 38% did not require any treatment whereas 17% needed exploratory laparotomy.

In other study, which gives a combined analysis of 23 series totaling more than 200,000 procedures, DL was showed to be a safe process with an acceptably low morbidity and mortality.¹²

Whereas in our study, acute abdominal pain was 78% and more in females. DL was safe process with an acceptably low morbidity and mortality. DL can determine the type of fluid along with the presence of food and accurately locate the site of perforation in the majority of cases. Besides a therapeutic approach either peritoneal lavage or simple suture closure of the perforation can be performed laparoscopically.

Several studies showed a diagnostic accuracy rate of 95%-98%. Cochrane (2002) examined 45 randomized controlled trials, comparing diagnostic and therapeutic outcomes of patients undergoing open or laparoscopic surgery for suspected appendicitis. Diagnostic outcome favored laparoscopic method in both the negative appendectomy rate and the frequency of an un-established diagnosis were reduced, most considerably in women in their reproductive age group. Believe of less adhesion with laparoscopic appendectomy needful studies with longer follow up. In decision in all equivocal cases laparoscopy is better than laparotomy. The question, should a normal looking appendix be removed during a DL for right iliac fossa pain is controversial. One approaching study from Netherland of 109 patients and a retrospective Irish study¹³⁻¹⁵, proposed that it is safe to leave a normal looking appendix when DL (diagnostic laparoscopy) is performed for doubted appendicitis. In our study, acute appendicitis were more in females than male, Therapeutic Intervention was required and stay in hospital for 6-8 hrs.

CONCLUSION

We conclude that laparoscopic surgery is safe and feasible for the surgeon both for the diagnostic and therapeutic purposes, benefiting for patients with suitable diagnosis, shorter hospital stay, decreased pain, lesser chances of wound infection, early to return work.

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