

**Diagnostic Laparoscopy in Acute Abdominal Pain: 5-Year Retrospective Series**

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**Background:** In acute abdomen, sometimes it is difficult to achieve diagnosis by the traditional method of investigation and policy of "Wait and See."

**Objective:** To analyze the efficacy of diagnostic laparoscopy in acute abdominal pain.

**Setting:** Surgical department, Salmaniya Medical Centre.

**Design:** Retrospective study.

**Method:** A study of 100 consecutive cases of acute non-specific abdominal pain between September 1995 and June 2000 who had diagnostic laparoscopy. The personal characteristics were recorded along with pre-operative diagnosis and final diagnosis. The presenting symptoms and any therapeutic procedure performed were noted.

**Result:** One hundred patients had diagnostic laparoscopy within 48 hours of admission due to acute non-specific abdominal pain. There were 18 males and 82 females. The mean age of this group was 31 ranging from 16 to 62 years. The patients presented with various complaints which included abdominal pain in 39, pain and anorexia in 14, abdominal pain with anorexia and vomiting in 34, abdominal pain and fever in 11 and abdominal mass in 2 patients. The mean hospital stay was 3.9 days  $\pm$  2 days (1-15 days) and the average operative time was 56.8 minutes (35-127 minutes).

A definitive diagnosis was achieved in 98 patients (98%) using diagnostic laparoscopy. Two patients had to be converted to formal open laparotomy. A therapeutic laparoscopic procedure was performed in 78 patients.

The laparoscopic findings were acute appendicitis in 73 patients, pelvic inflammatory disease in 14, significant ovarian cysts in 7, endometriosis in 3, ectopic pregnancy in 2 and Meckel's diverticulitis in 1.

**Conclusion:** In this study, the diagnosis was achieved through laparoscopy in 98% of cases.

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Acute abdominal pain represents 1% of hospital admissions and 6% of emergency visits<sup>1</sup>. These cases cause a burden on the hospital and physician especially the non-specific abdominal pain which is defined as acute abdominal pain of less than 7 days' duration, and for which there is no diagnosis after examination and baseline investigations<sup>2</sup>. Challenging as it is, a careful history-taking, thorough evaluation of symptoms, head-to-toe physical examination, and judicious use of laboratory tests can simplify the evaluation of this complaint. However, some cases still remain confusing after all diagnostic tools have been utilized.

An option that is taken is "wait and see" by hospitalizing the patient and performing frequent examinations when they have non-typical signs. The predictive value of this method was estimated between 68-92%<sup>3-6</sup>. This method may pose undue risk upon the patient from complications such as peritonitis, hemorrhage, or infertility. However, if active measures are taken, laparotomy may be performed unnecessarily<sup>7,8</sup>.

With the advent of minimally invasive techniques, diagnostic laparoscopy has become an option to diagnose and treat conditions with acute abdominal pain. Diagnostic laparoscopy is safe and well tolerated and can be performed in an outpatient or inpatient setting under general anesthesia<sup>9</sup>. Indications for diagnostic laparoscopy have been established to include: intra-abdominal/retroperitoneal masses, liver disease, ascites, abdominal pain or acute abdomen, abdominal trauma, miscellaneous conditions, including palpable abdominal mass, abdominal or pelvic pain of unknown origin, acute and chronic abdominal pain in the elderly patient, fever of unknown origin, and in patients with suspected congenital abnormalities (SAGES guidelines, RCSI clinical guidelines).

This retrospective study analyzes the efficacy of diagnostic laparoscopy in acute abdominal pain.

## **METHOD**

This study is retrospective and includes 100 consecutive cases of acute non-specific abdominal pain seen between September 1995 and June 2000 who had diagnostic laparoscopy. The personal characteristics were recorded along with pre-operative diagnosis and final diagnosis. The presenting symptoms and any therapeutic procedure performed were noted.

The patients selected had equivocal diagnoses and had clinical, laboratory and imaging studies (Ultrasound), which were inconclusive.

## **RESULT**

One hundred patients had diagnostic laparoscopy within 48 hours of admission due to acute non-specific abdominal pain. There were 18 males and 82 females. The mean age of this group was 31 ranging from 16 to 62 years. The patients presented with various complaints, which included abdominal pain in 39, pain and anorexia in 14, abdominal pain with anorexia and vomiting in 34, abdominal pain and fever in 11 and abdominal mass in 2 patients. The mean hospital stay was 3.9 days  $\pm$  2 days (1-15 days) and the average operative time was 56.8 minutes (35-127 minutes) see table 1.

**Table 1 Symptoms and Signs and Their Frequency**

Symptom and signs	Number
Abdominal pain	39
Pain and anorexia	14
Abdominal pain with anorexia and vomiting	34
Abdominal pain and fever	11
Abdominal mass	2
Total	100

A definitive diagnosis was achieved in 98 patients (98%) using diagnostic laparoscopy. Two patients had to be converted to formal open laparotomy due to technical fault in the laparoscopic surgery and excessive adhesions in the other which hindered visualization. A therapeutic laparoscopic procedure was performed in 78 patients. In 14 patients, diagnosis was made that did not require any surgical procedure. Six patients needed to have laparotomy performed after laparoscopic diagnosis of the condition.

Acute appendicitis was diagnosed in 73 patients which included 56 females and 17 males. Twenty-seven patients had non-appendiceal pathology which caused the abdominal pain. The laparoscopic findings were acute appendicitis in 73 patients, pelvic inflammatory disease in 14, significant ovarian cysts in 7, endometriosis in 3, ectopic pregnancy in 2 and Meckel's diverticulitis in 1 see table 2.

**Table 2 Laparoscopic Findings**

Laparoscopic finding	Number of patient
Appendicitis	73
Pelvic inflammatory disease	14
Significant ovarian cysts	7
Endometriosis	3
Ectopic pregnancy	2
Meckel's diverticulitis	1

## DISCUSSION

Non-specific abdominal pain (NSAP) is a significant problem in general surgery and accounts for an estimated 13% to 40% of emergency surgical admissions for acute abdomen<sup>10,11</sup>. The mean hospital stay for patients admitted with NSAP ranges between 4 and 6 days, using the traditional observation management<sup>7</sup>. The repercussion of delay of certain cases is serious and may increase morbidity and prolong hospital stay.

In the management of acute abdomen, laparoscopy has both a diagnostic and a therapeutic role. The use of diagnostic laparoscopy in patients with acute abdominal pain is not new, and many studies have demonstrated an improvement in surgical decision-making with its use, particularly when the need for an operation is

uncertain<sup>7,12</sup>. Therefore, non-specific abdominal pain is a good indication for early laparoscopy to improve diagnostic rate and as a definitive therapeutic procedure.

The commonest operative diagnosis in this study was acute appendicitis (73%). The diagnostic rate with laparoscopy was 98% because two patients had to be converted to laparotomy before achieving diagnosis. Three randomized controlled trials compared early laparoscopy to active clinical observation<sup>2,13,14</sup>. All trials showed that early laparoscopy clearly facilitated the establishment of a diagnosis with subsequent therapy. The diagnostic rates in those studies were 97%, 81% and 79.2% after early laparoscopy compared to 28%, 36% and 45.1% after clinical observation.

A significant advantage to diagnostic laparoscopy is the reduction of hospital stay compared with active observation. In this study, the average hospital stay was 3.9 days, which is nearly similar to the average of 3.7 days in Gaiten's randomized controlled trial<sup>15</sup>.

In this study, the conversion rate of open laparotomy was 2% and 6% needed laparotomy after laparoscopic diagnosis was achieved; 8% laparotomy is similar to another study from the Middle East<sup>16</sup>.

## CONCLUSION

**Diagnostic laparoscopy is an effective modality for increasing diagnostic rates in non-specific acute abdominal pain. In addition, a definitive therapeutic procedure can be undertaken laparoscopically in most patients instead of resorting to open laparotomy.**

**In this study, the diagnosis was achieved through laparoscopy in 98% of cases.**

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