Role of Diagnostic Laparoscopy in Cases of Acute and Chronic Abdominal Pain

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ABSTRACT

BACKGROUND
We wanted to evaluate the efficacy of laparoscopy as a diagnostic tool in the evaluation of pain abdomen, compare it with clinical examination and common radiological investigations like x-ray erect abdomen and ultrasound abdomen, demonstrate the occasions in which it is useful as a therapeutic tool and evaluate the benefits and complications of diagnostic laparoscopy.

METHODS
100 cases of pain abdomen who presented to the outpatient and emergency departments were admitted and evaluated. They consisted of both male and female patients. The cases consisted of both acute and chronic abdomen evaluated over a period of 2 years i.e. from January 2017 to January 2019.

RESULTS
100 cases of pain abdomen who presented to the outpatient and emergency department were evaluated. Diagnostic laparoscopy could diagnose 68 out of 79 cases of acute pain abdomen and 20 out of 21 cases of chronic pain abdomen. 49 out of 79 acute cases and 13 cases out of 21 chronic cases required surgery. 12 cases could not be diagnosed, out of these 9 patients had symptomatic relief. There were no complications in the series.

CONCLUSIONS
Diagnostic laparoscopy is simple, safe, easily available and diagnostically accurate, but it is invasive, traumatic and not the first choice for diagnosis. It is mostly useful for those with abdominal pain where definite cause could not be diagnosed with clinical examination or radiological investigations. It has reduced the number of negative laparotomies and in those cases requiring laparotomy.

KEYWORDS
Diagnostic Laparoscopy, Acute Appendicitis, Adhesions, Pelvic Inflammatory Disease
BACKGROUND

Pain abdomen is one of the most frequent complaints seen by a general surgeon in an elective or emergency setting. The causes of pain abdomen are varied. The diagnosis of a case of pain abdomen is usually difficult due to the varied presentation and presence of a large number of differential diagnoses. Clinical history and proper clinical examination give a clue to the diagnosis, based on which investigative procedures are done so as to confirm the diagnosis. A wide range of biochemical, pathological and radiological investigations are available to diagnose the cause of pain abdomen. Ultrasound abdomen is one of the most frequently used tools used in the diagnosis of pain abdomen. Newer modalities like laparoscopy are being used in diagnosing pain abdomen. Diagnostic laparoscopy is a minimally invasive surgical procedure that allows the visual examination and documentation of intra-abdominal organs in order to detect any pathology.

In 1902 George Kelling, of Dresden, Saxony, performed the first laparoscopic procedure in dogs and in 1910 Hans Christian Jacobaeus of Sweden reported the first laparoscopic operation in humans. In the ensuing several decades, numerous individuals refined and popularized the approach further for laparoscopy. Laparoscopic techniques are now being used with greater frequency for the diagnosis and management of traumatic injuries.

Diagnostic laparoscopy (DL) may be a key to solving the diagnostic dilemma of pain abdomen. The emergency laparoscopic approach for patients with acute abdomen improves the diagnostic accuracy and is therefore nowadays recommended and accepted. It has a role in many abdominal conditions like acute appendicitis, acute intestinal obstruction, acute salpingitis, pelvic inflammatory disease, ovarian torsion etc., A laparoscope is a telescope designed for medical use. It is connected to a high intensity light source and a high-resolution television camera so that the surgeon can visualize the abdominal cavity and viscera. The laparoscope is put into the abdominal cavity through a port and the image of the abdominal cavity and viscera is seen on the television screen. In most cases, this procedure (operation) will be able to diagnose or help discover what the abdominal problem is, the additional advantage of diagnostic laparoscopy is that it can be converted into therapeutic laparoscopy based on the intra-abdominal pathology.

The aim of our study was to demonstrate the usefulness of laparoscopy as a diagnostic tool which can be converted into a therapeutic tool at the same time.

METHODS

The present study is an endeavour to establish the role of diagnostic laparoscopy as a simple, safe and accurate tool in the evaluation of pain abdomen.

Inclusion Criteria

Patients in the age group of 13-60 yrs. and who were fit for general anaesthesia were included.

Exclusion Criteria

Children less than 13 year of age and adults more than 60 yrs. age, haemodynamically unstable patients, patients not fit for general anaesthesia, patients with coagulation disorders, cardiac failure, respiratory distress and renal failure, pregnant patients, delayed peritonitis cases and intestinal obstruction cases with hugely distended bowel loops were excluded from the study.

Patients with acute pain abdomen were evaluated clinically and radiologically with ultrasound abdomen in all cases and plain X ray abdomen in some on presentation and within 12 hrs with diagnostic laparoscopy. Patients with chronic pain abdomen were evaluated using ultrasound immediately on presentation and with diagnostic laparoscopy within 24-48 hrs.

RESULTS

100 cases of pain abdomen who presented to the outpatient and emergency department were evaluated. Demographics were listed in Table 1. Majority of the patients were young adults of age 21-30 years.

Acute Abdomen

In the acute abdomen category, the majority were males whereas in the chronic abdomen category, the majority were females, in our study. Of the 100 cases, 79 cases were of acute abdomen and 21 cases of chronic pain abdomen listed out in table 2. Diagnostic laparoscopy could diagnose- 68/79 cases. Ultrasound abdomen could diagnose- 55/79 cases. Cases missed by ultrasound were some cases of retrocaecal appendicitis, aetiology of peritonitis, some cases of pancreatitis, cause of intestinal obstruction, salpingitis. Conversion rate for acute abdomen was 42.8%. The reason being that all peritonitis and complicated cases were converted to laparotomy.
Abdominal pain is a significant problem in general surgery and accounts for an estimated 13 to 40% of emergency surgical admissions for abdominal pain.\textsuperscript{6,7} Studies have, however, doubted the effectivity of extensive investigations\textsuperscript{6,9} and several authors have documented the utility of DL in the evaluation and management of such patients.\textsuperscript{10-12} Sarfati et al\textsuperscript{13} in his review of 203 appendicectomies concluded that adjuvant testing was not helpful and showed that outcomes were improved by early surgical intervention. Radiological investigations like x-rays, ultrasound abdomen and CT scans are used routinely in the diagnosis of pain abdomen. But there exist some disorders and some clinical presentations which cannot be diagnosed with the above investigations. In our country where advanced radiological investigations are beyond the scope of grass root level medical practice (often not readily available and costly) this approach only serves to increase cost and delay treatment. Diagnostic laparoscopy should, thus, be considered as next step of the management.\textsuperscript{14}
The aim of our study was to demonstrate the usefulness of laparoscopy as a diagnostic tool which can be converted into a therapeutic tool at the same time. Diagnostic laparoscopy could diagnose 68 out of 79 cases of acute pain abdomen and 20 out 21 cases of chronic pain abdomen i.e. 86.07% positive predictive value in acute abdomen cases and 95.23% accuracy in chronic abdomen cases in our study. It is compared to other similar reports of high definitive diagnostic rates (between 86 and 100%) for early DL Salky, in his study was able to identify pathology in 69 of 70 patients. Sugerbaker et al gave a diagnostic accuracy of 96% for DL. The major pathologies diagnosed in our study were acute appendicitis, Acute cholecystitis, adhesions, & and abdominal tuberculosis. Laparoscopic therapeutic procedures done were Adhesiolysis, Biopsy, Appendicectomy, Cholecystectomy. Acute appendicitis and gynaecological pathology were also the main findings in Salky’s series, whereas in an Indian study by Arya PK and associates abdominal and pelvic tuberculosis were the main pathological findings followed by appendicitis. Easter et al., however, reported a high incidence (47%) of postoperative adhesions; adhesiolysis was done at the same sitting. In our study adhesions were the important cause of chronic abdominal pain which were managed therapeutically with laparoscopy.

Laparoscopy is very sensitive for the diagnosis of appendicitis whether acute or chronic; it not only detects appendicitis but also avoids negative appendectomies. An early DL in suspected acute appendicitis reduces the risk of appendiceal perforation, improves diagnostic accuracy and reduces the number of negative laparotomies. It is especially useful in morbidly obese patients where large incisions are required for removing appendix and chances of wound infections are high. In our study, 3 cases of suspected abdominal tuberculosis underwent DL and omental biopsy was taken and all were later proved by histopathology. In one case there was a suspicion off secondary deposits, underwent DL and omental; biopsy was taken and sent for histopathological examination for diagnosis and were sent for higher institute for treatment. Hence, these patients were saved from unnecessary laparotomies for nonresectable / nonsurgical pathologies. DL has a role in trauma patients as well provided the patient is stable hemodynamically. It has been documented by two randomized studies. However, this is an evolving field. Follow-up of our patients showed an improvement in the symptoms in a majority of cases with very few interventions needed post-laparoscopy.

CONCLUSIONS

Diagnostic laparoscopy is simple, safe, easily available and diagnostically accurate, but it is invasive, traumatic and not the first choice for diagnosis. Diagnostic laparoscopy is mostly useful for those with abdominal pain where definite cause could not be diagnosed with clinical examination or radiological investigations. Laparoscopy can be used both diagnostically and therapeutically in the same setting. It has reduced the number of negative laparotomies and in those cases requiring laparotomy, the site and size of incision. Increase in the skills of the surgeons and technological advancement will help in diagnosing more number of conditions. It should be reserved for those situations where non-invasive methods fail to make a diagnosis.

REFERENCES


