

Role of Diagnostic Laparoscopy in Chronic Abdominal Conditions with Uncertain Diagnosis

Amandeep S Nar, Ashvind Bawa, Atul Mishra, Amit Mittal¹

Department of Surgery, Dayanand Medical College and Hospital, Ludhiana, Punjab, ¹Department of Neurosurgery, Govind Ballabh Pant Hospital, New Delhi, India

ABSTRACT

Introduction: Laparoscopy has proved to be an important tool in the minimally invasive exploration of selected patients with chronic abdominal disorders, whose diagnosis remains uncertain, despite exploring the requisite laboratory and imaging investigations like ultrasonography, computed tomography (CT) scan, and the like. **Materials and Methods:** Diagnostic Laparoscopy was conducted on 120 patients, admitted to the Departments of Surgery and Gynecology, Dayanand Medical College and Hospital, Ludhiana, with an uncertain diagnosis after four weeks of onset of symptoms. **Conclusion:** With laparoscopy providing tissue diagnosis, and helping to achieve the final diagnosis without any significant complication and less operative time, it can be safely concluded that diagnostic laparoscopy is a safe, quick, and effective adjunct to non-surgical diagnostic modalities, for establishing a conclusive diagnosis, but whether it will replace imaging studies as a primary modality for diagnosis needs more evidence.

KEYWORDS: Chronic abdominal conditions, diagnostic laparoscopy, uncertain diagnosis

INTRODUCTION

Since the days of Hippocrates, medical science is constantly thriving to peep into dark places of the body and to achieve such techniques that would bring perfection to diagnosis. Laparoscopy, one such achievement developed in the twentieth century, offers a simple, rapid, and safe method to evaluate and diagnose intra-abdominal diseases.^[1]

The success of laparoscopy in making definite and reliable diagnosis of abdominal disorders over the past two decades, has firmly established it in the armamentarium of a general surgeon to perform this procedure safely. Despite this fact, general surgeons are still reluctant to use this method of diagnosis as often as they can.

Diagnostic and therapeutic laparoscopy has its most important and ultimate application in the developing world. Less than 20% of the population in the developing world has access to imaging devices like ultrasound, CT scan, magnetic resonance

Address for correspondence:

Dr. Ashvind Bawa,
Bawa Hospital, Near Old Dandi Swami Mandir,
Civil Lines, Ludhiana, Punjab, India.
E-mail: drbawa@gmail.com

Access this article online

Quick Response Code:	Website: www.nigerianjsurg.com
	DOI: *****

imaging (MRI) or Doppler. By a happy paradox, vast areas of the developing world have access to a laparoscope, thanks largely to its use in widespread government-sponsored family planning campaigns in almost every developing country throughout the world.^[1]

Laparoscopy can be proved to be an important tool in the minimally invasive exploration of selected patients with chronic abdominal disorders, whose diagnosis remains uncertain, despite exploring the requisite laboratory and imaging investigations like ultrasonography, CT scan, and the like. Chronic abdominal conditions are associated with poor quality of life^[2] and significant levels of depressive symptoms.^[3] Much is known about the prevalence, social burden, and suffering associated with chronic abdominal conditions.^[4]

As noninvasive technology in diagnosis has reached such sophistication, Laparoscopy, it must be stressed, is still an invasive procedure. It has to prove its value both in terms of positive diagnosis and also in terms of safety. It must always follow careful clinical examination and its greatest value is in addition to other diagnostic aids.

To evaluate these potential benefits of diagnostic laparoscopy in cases of chronic abdominal conditions with uncertain diagnosis, this study was conducted on 120 subjects, expecting that in the coming future, it might obviate the need for imaging techniques in establishing the final diagnosis of these conditions.

MATERIALS AND METHODS

This study was done in 120 patients, admitted to the Departments of Surgery and Gynecology, at the Dayanand Medical College and Hospital, Ludhiana, with an uncertain diagnosis, after four weeks of onset of symptoms.

Exclusion criteria

1. Severe/decompensated cardiopulmonary failure
2. Acute myocardial infarction
3. Bacterial peritonitis
4. Abdominal wall infection
5. Severe coagulopathy
6. Large ventral hernia
7. Diaphragmatic hernia
8. Patient unfit for general anesthesia.

In any chronic abdominal condition in which the cause was unknown, Laparoscopy was performed after completion of all the necessary hematological, biochemical, radiological, and ascitic fluid analysis, gastrointestinal endoscopic and imaging techniques, and Mantoux test (when indicated). Therapeutic intervention was performed depending on the underlying pathology with open laparotomy or laparoscopic techniques.

For the purpose of this study, a positive diagnostic benefit was defined as a definite diagnosis made on the basis of laparoscopic findings. In the case of turnovers, diagnostic benefit also implied staging and assessment of inoperability, either because of metastatic deposits or significant local invasion. The complications during the procedure were also recorded. The findings of laparoscopy were compared with those of imaging techniques. The data was presented by descriptive statistics. For statistical purposes, the Chi-square test, *t*-test, and Levene's test were applied.

RESULTS

One hundred and twenty patients were selected for the study, in which the diagnosis remained uncertain despite requisite investigations. The majority of the patients were in the age group of 55 ± 5 years with no gender preference. Pain was associated with other complaints like fever [15 (12.5%)], weakness [13 (10.8%)], constipation [12 (10%)], loss of weight and appetite [11 (9.16%)], and vomiting [4 (3.33%)] [Figure 1].

Forty (33.33%) patients had a history of previous abdominal surgery, twelve (10%) had received anti-tuberculosis treatment, and eight (6.66%) subjects had peripheral lymphadenopathy, with inconclusive cytology and biopsy. Twenty-eight (23.3%) patients had a palpable lump, the erythrocyte sedimentation rate was raised in nine (7.5%) subjects, while the Mantoux test was positive in fifteen (12.5%) subjects.

All subjects underwent computerized tomographic scanning (CT scan), out of which, sixty-three (52.5%) patients had a change

in findings when compared with the findings on ultrasonography. The CT scan was better able to suggest dilatation of gut loops and retroperitoneal/mesenteric lymphadenopathy [Figure 2].

Outcome of diagnostic laparoscopy

Thirty-three subjects out of 120 cases (27.5%) had altogether new findings, while 87 (72.5%) cases had findings similar to the radiological means. Thirty-five out of these 87 had new findings along with the previous findings. Therefore, 68 out of the 120 subjects had new findings, irrespective of the previous findings, in the form of nodules (peritoneal, omental or liver) (35), small bowel tumor (4), cirrhosis of liver (8), and adhesions (21). Inflamed appendix, creeping fat necrosis, abdominal wall abscess etc., were the other significant findings. After diagnostic laparoscopy, tissue diagnosis was achieved in 102 of the 120 subjects (85%), out of which 56.6% were benign and 43.3% were malignant.

The final diagnosis was reached in 112 of the 120 cases, namely, disseminated carcinomatosis (28), tuberculosis (23) [Figure 3], lymphoma (17), benign liver cyst (9), cirrhosis liver (8) [Figure 4], benign ovarian cyst (5), postoperative adhesions/band (7), chronic appendicitis (3), Crohn's disease (3), chronic pancreatitis (3), gastrointestinal stromal tumor (4), and angiosarcoma (2) [Figure 5].

DISCUSSION

Chronic abdominal conditions have been a challenge. Prior to the era of diagnostic laparoscopy, these patients used to undergo a battery of expensive investigations, while remaining dissatisfied. The search for pathology in these patients usually entailed a series of laboratory and invasive tests.

Surgeons are consulted when the pathology is unclear or tissue diagnosis is required.^[5,6] Diagnostic laparoscopy provides an intermediate option avoiding full exploratory laparotomy and minimizing the surgical trauma in chronically ill patients.

As the purpose of this study was to evaluate the role of laparoscopy as a major diagnostic tool in patients presenting with a chronic abdominal condition, with uncertain diagnosis, it has been clearly observed that laparoscopy has a diagnostic rate of 93.3% in these patients.

In a study, Salky^[7] was able to identify pathology in 69 of 70 patients with either appendicitis or gynecological pathology being the main finding. Al-akeely MH^[8] in his study reported tuberculosis to be the common final diagnosis (45.71%) followed by carcinomatosis peritonei (28.5%) and lymphoma (8.57%). In comparison, disseminated carcinomatosis (23.3%) was the common final diagnosis in our study followed by tuberculosis (19.1%) and lymphoma (14.1%).

The reason behind the low percentage of tuberculosis in our study could be due to the tendency of a therapeutic trial of

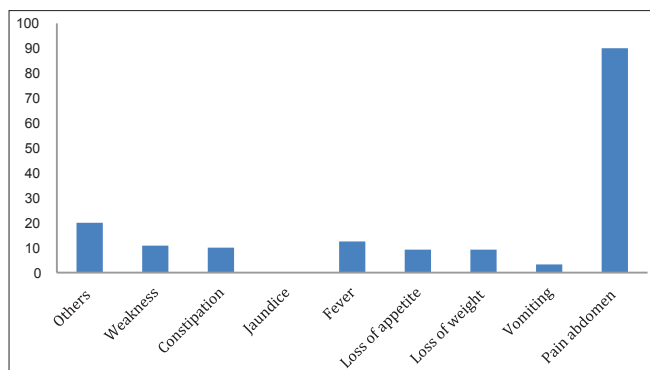


Figure 1: Percentage of patients according to complaint reported (Some patients had more than one complaint)

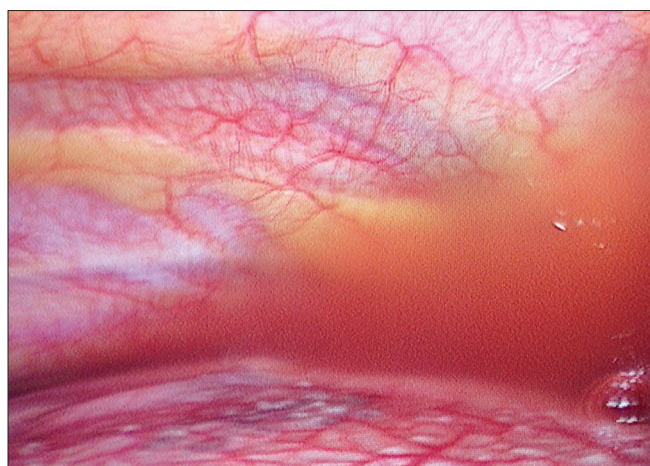


Figure 3: Abdominal tuberculosis on diagnostic laparoscopy

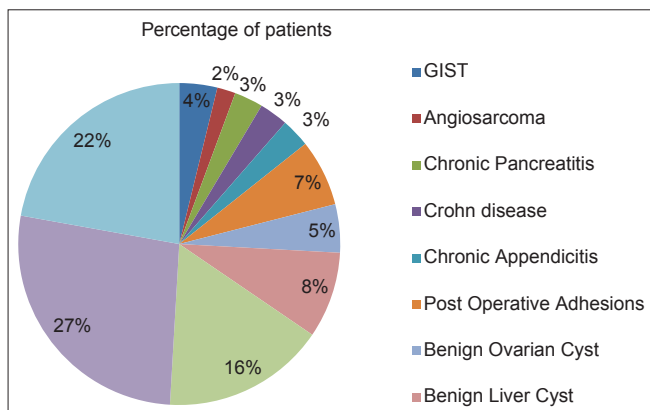


Figure 5: Distribution of subjects according to final diagnosis

anti-tubercular treatment being given in our society to patients with a strong suspicion of tuberculosis, without any diagnostic proof. We would recommend having a definite diagnosis to rule out malignancy, prior to anti-tubercular treatment.

Clinically, small, metastatic foci in the peritoneum or liver cannot be accurately diagnosed using the traditional ultrasound, CT or MRI, in some cases.^[9] In the current study, 23.3% of the cases were diagnosed as having disseminated

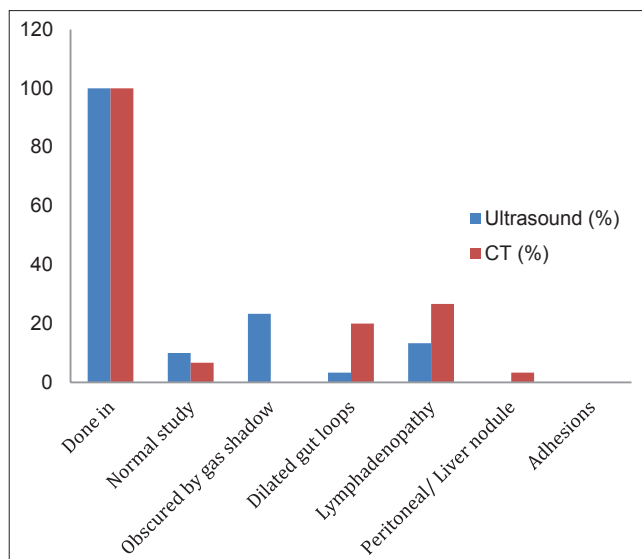


Figure 2: Distribution of subjects according to imaging studies



Figure 4: Liver cirrhosis on diagnostic laparoscopy

carcinomatosis on diagnostic laparoscopy with 57.1% of these having peritoneal/omental nodules. The other associated findings included liver nodules (42.8%), ascites (39.2%), and lymphadenopathy (17.8%), whereas, only four out of 120 patients had findings of peritoneal deposits on radiological investigations. In this aspect, diagnostic laparoscopy clearly scores above the imaging studies.

Negative laparoscopic exploration in patients suspected to have malignancy is considered a useful outcome, as this provides reassurance to the patient and physician, thus avoiding the implementation of further expensive diagnostic tests.^[5]

The success of diagnostic laparoscopy in the diagnosis and staging of gastrointestinal malignancies suggested that it could be used for intra-abdominal lymphomas as well. Mann *et al.*,^[10] reported that laparoscopy helped in obtaining tissue samples in suspected cases of lymphoma. In our study, tissue biopsy taken during laparoscopy, confirmed the diagnosis of lymphoma in 14.16% of the cases.

Diagnostic laparoscopy has a great deal to offer in the early diagnosis of abdominal tuberculosis.^[11] Udwardia TE suggests that the common findings in abdominal tuberculosis are peritoneal or visceral tubercles, varying in size from 2 mm to 1 cm.^[12] Small bowel adhesions and strictures can also be seen. In the present study, 23 cases had been finally diagnosed as having abdominal tuberculosis, without any evidence of Pulmonary Koch's; 52.2% of these cases had intra-abdominal adhesions as the operative findings.

Diagnostic laparoscopy has also widened the horizon in the field of Hepatology.^[13] In the current study, nine out of 120 patients were diagnosed as having benign liver cysts, with 6.6% of the cases having cirrhosis as an incidental finding. Therefore, 14.2% of the patients had liver pathology, whereas, imaging studies suggested liver pathology in only 6.7% of the cases. Herrera *et al.*, also reported the detection rate of liver lesions and a diagnostic yield up to 95% with laparoscopy.^[14]

Diagnostic laparoscopy, when performed by general surgeons has an additional advantage of providing a definite treatment at the same time. As seen in our study, therapeutic intervention was done in cases of benign liver cysts (9), chronic appendicitis (3), gastrointestinal stromal tumor (GIST) (4), postoperative bands (7), and cholelithiasis with cirrhosis (4).

Only one of the patients in the present study had postoperative wound complications, from which the patient recovered within a week. Easter *et al.*,^[2] also reported no major procedure-related complications.

CONCLUSION

Laparoscopy is able to achieve the final diagnosis and provide tissue diagnosis without any significant complication and less operative time. It can be safely concluded that diagnostic laparoscopy is a safe, quick, and effective adjunct to diagnostic modalities, for establishing a conclusive diagnosis, but, whether, it will replace imaging studies as the primary modality for diagnosis, needs more evidence.

REFERENCES

1. Udwardia TE, Udwardia RT, Menon K, Kaul P, Kukreja L, Jain R, *et al.* Laparoscopic surgery in the developing world. An overview of the Indian scene. *Int Surg* 1995;80:371-5.
2. El-Labban GM, Hokkam EN. The efficacy of laparoscopy in the diagnosis and management of chronic abdominal pain. *J Minim Access Surg* 2010;6:95-9.
3. Ferrell BR. The impact of pain on quality of life. A decade of research. *Nurs Clin North Am* 1995;30:609-24.
4. Magni G, Rossi MR, Rigatti-Luchini S, Merskey H. Chronic abdominal pain and depression. Epidemiologic findings in the United States. Hispanic health and nutrition examination survey. *Pain* 1992;49:77-85.
5. Easter DW, Cuschieri A, Nathanson LK, Lavelle-Jones M. The utility of diagnostic laparoscopy for abdominal disorders. Audit of 120 patients. *Arch Surg* 1992;127:379-83.
6. Schrenk P, Woisetschläger R, Wayand WU, Rieger R, Sulzbacher H. Diagnostic laparoscopy: A survey of 92 patients. *Am J Surg* 1994;168:348-51.
7. Salky B. Diagnostic laparoscopy. *Surg Laparosc Endosc* 1993;3:132-4.
8. Al-Akeely MH. The impact of elective diagnostic laparoscopy in chronic abdominal disorders. *Saudi J Gastroenterol* 2006;12:27-30.
9. Sackier JM, Berci G, Paz-Partlow M. Elective diagnostic laparoscopy. *Am J Surg* 1991;161:326-31.
10. Mann GB, Conlon KC, LaQuaglia M, Dougherty E, Moskowitz CH, Zelenetz AD. Emerging role of laparoscopy in the diagnosis of lymphoma. *J Clin Oncol* 1998;16:1909-15.
11. Malik AM, Talpur KA, Soomro AG, Qureshi JN. Yield of diagnostic laparoscopy in abdominal tuberculosis: Is it worth attempting? *Surg Laparosc Endosc Percutan Tech* 2011;21:191-3.
12. Udwardia TE. Peritoneoscopy in the diagnosis of abdominal tuberculosis. *Indian J Surg* 1978;1:91-5.
13. Vargas C, Jeffers LJ, Bernstein D, Reddy KR, Munnangi S, Behar S, *et al.* Diagnostic laparoscopy: A 5-year experience in a hepatology training program. *Am J Gastroenterol* 1995;90:1258-62.
14. Herrera JL, Brewer TG, Peura DA. Diagnostic laparoscopy: A prospective review of 100 cases. *Am J Gastroenterol* 1989;84:1051-4.

How to cite this article: ????

Source of Support: Nil, Conflicts of Interest: None declared.