

ROLE OF DIAGNOSTIC LAPAROSCOPY - IN DOUBTFUL ABDOMINAL AND PELVIC PATHOLOGIES

***Dr. Uppalapati Srinivasulu, Prof. Dr. M. Senthivelan, and Prof. Dr. C. Subramanian**

*Post Graduate, Department of General Surgery, Rajah Muthiah Medical College and Hospital, Annamalai University, Annamalainagar-608 002, Tamilnadu, India

Article History: Received 5th September, 2014, Accepted 6th October, 2014, Published 7th October, 2014

ABSTRACT

BACKGROUND AND OBJECTIVES: Field of medicine has always been a paradox, wherein, most of the diseases can be diagnosed based on history, clinical examination and investigations. But there are quite a number of them who remain undiagnosed inspite of being extensively investigated. The final investigation in some of the patients can be exploratory laparotomy: needless to overemphasize the role of laparoscopic exploration as to replace laparotomy. Rajah Muthiah Medical College and Hospital is a multispeciality tertiary care centre, where, we come across quite a number of complicated, undiagnosed references. Among these patients a good number undergo laparoscopy as diagnostic and therapeutic modality. Diagnostic laparoscopy has been extensively studied in western literature but Indian perspective is lacking. Here is an Indian perspective in a tertiary centre. This will aid the institution to be better prepared to meet and manage difficult abdominal and pelvic pathologies effectively, preventing unnecessary dilemma in patient management and reduce patient suffering. **METHODS:** A prospective descriptive study including all patients with clinically undiagnosed and/or with suspicious diagnosis of abdominal pathologies and pelvic problems who underwent Diagnostic Laparoscopy during the period between June 2012 to June 2014 in Rajah Muthiah Medical College and Hospital, Chidambaram a multi-speciality hospital was undertaken and the results were evaluated. **RESULTS:** Forty (40) patients were included in our study, of which, 32 (80%) had pain abdomen, ascites in 2 (5%) and staging laparoscopy in 6 (15%) as indication. 19 (47.5%) male and 21 (52.5%) female patients were evaluated. All patients underwent diagnostic laparoscopy, and, in 37 (92.5%) we came to definitive diagnosis and in 3 (7.5%) cases no diagnosis could be made. Out of 37 patients, 9 had Koch's abdomen, 3 chronic appendicitis, 4 acute appendicitis, 6 adhesions, 2 Pelvic inflammatory disease (PID), 8 abdominal malignancy, 2 appendicular mass and one each of chocolate cyst of ovary, appendicular mass with Para-umbilical hernia (PUH), & cirrhosis with PUH. Diagnostic Laparoscopy (DL) confirmed pre-operative diagnosis in 5 (12.5%) patients, changed in 15 (37.5%) and a new diagnosis was made in 17 (42.5%) patients. 13 patients underwent definitive procedure laparoscopically, whereas, in 1 case an alternate procedure was done laparoscopically. 5 (12.5%) had open surgical intervention and in 6 (15%) cases major procedure was abandoned. Rest 15 (37.5%) were managed conservatively. We had 2 (5%) complications; bleeding in 1, managed laparoscopically, and wound infection in other case which was managed by antibiotics. **CONCLUSION:** Diagnostic Laparoscopy is helpful in confirming diagnosis in doubtful abdominal and pelvic pathologies; in diagnosing pathology of undiagnosed pain abdomen and staging of gastro-intestinal tract malignancies. DL can save a patient from a more radical resection if peritoneal or liver mets are found, reducing the morbidity & mortality due to a major procedure, especially in chronically ill patient. It avoids unnecessary laparotomies and is therapeutic in some cases.

Keywords: Diagnostic Laparoscopy, Pain abdomen, Ascites, Abdominal malignancies

1. INTRODUCTION

Acute abdomen is not a disease by itself, but a description of a complex of symptoms combined with severe abdominal pain developed within a time frame of less than 24 hours.¹ Diagnostic laparoscopy (DL) may be a key to solving the diagnostic dilemma of nonspecific acute abdomen. Furthermore, it allows, not only direct inspection of the

abdominal cavity, but also surgical intervention, if needed.² Diagnostic laparoscopy is a minimally invasive surgical procedure that allows the visual examination of intra-abdominal organs in order to detect pathology.

Diagnostic laparoscopy was first introduced in 1901, when the German surgeon George Kelling performed a peritoneoscopy in a dog, which was called "celioscopy". A Swedish internist named H.C. Jacobaeus is credited with

*Corresponding author Dr. Uppalapati Srinivasulu, Post Graduate, Department of General Surgery, Rajah Muthiah Medical College, & Hospital, Annamalai University, Annamalainagar – 608 002, Tamilnadu, India

performing the first diagnostic laparoscopy in humans in 1903.³

The diagnostic value of emergency laparoscopy has been proved since the 1950s and 1960s, but emergency diagnostic laparoscopy with surgical intervention is recent. It was first proposed by Philippe Moment in 1990.⁴

History and physical examination will generally lead to correct diagnosis occasionally but diagnostic laparoscopy when compared to open laparotomy is better in the absence of adhesions where whole of the peritoneal cavity can be visualized but in case of retroperitoneal lesions, due to lack of tactile sensations, the lesion can not be palpated which is possible by open laparotomy.⁵

The procedure allows rapid and thorough inspection of the paracolic gutters and pelvic cavity that is not possible with the open approach. The emergency laparoscopic approach for patients with acute abdomen improves the diagnostic accuracy and is therefore nowadays recommended and accepted worldwide.⁶

AIMS AND OBJECTIVES OF THE STUDY

Laparoscopy has definitely reduced the rate of negative non-therapeutic laparotomies in undiagnosed abdominal pain. Once diagnosis is established DL helps in proper therapeutic management of patients. All the common acute abdominal conditions such as acute appendicitis, perforation, gynecological conditions can be treated effectively by Therapeutic Laparoscopy (TL) due to increase in skills of the surgeons and technological advancement

2.MATERIALS AND METHODS

Study Design

Prospective descriptive study.

Study Population

Patients admitted to the surgery ward of Rajah Muthiah Medical College Hospital between the period of June 2012 - June 2014.

Inclusion Criteria

- Acute pain abdomen cause of which not diagnosed by routine investigations.
- Chronic pain abdomen of uncertain etiology.
- Ascites of unknown etiology.
- For detection of imaging occult metastatic disease or unsuspected locally advanced disease in patients with resectable disease based on preoperative imaging prior to laparotomy.

Exclusion criteria

1. Inability to tolerate pneumoperitoneum or general anesthesia
2. Multiple adhesions / 3 or more prior abdominal operations.
3. Uncorrected coagulopathy,
4. Generalized peritonitis,
5. Haemodynamic instability,
6. Mechanical or paralytic ileus

Methodology

All patients aged 15 and above who underwent diagnostic laparoscopy for abdominal causes, admitted in the Rajah Muthiah Medical College Hospital over a period between June 2012 - June 2014.

3.RESULTS

Statistical Methods

Descriptive statistical analysis has been carried out in the present study.

Study design: A Prospective surgical study consisting of 40 patients is under taken to study the role of diagnostic laparoscopy in doubtful abdominal and pelvic pathologies, Table 1: Age distribution.

Table 1 Age Distribution

AGE (YEARS)	NO. OF PATIENTS	PERCENTAGE
1- 10	0	0
11-20	8	20
21-30	8	20
31-40	6	15
41-50	5	12.5
51-60	6	15
>60	7	17.5
TOTAL	40	100

We had patients of all age groups starting from 16 years to 71 years. Most of them were between 11 to 30 years.

Table 2 Gender distribution.

MALE	19	47.5
FEMALE	21	52.5
TOTAL	40	100

We had 19 (47.5%) male and 21 (52.5%) female patients.

Table 3. Indication for Diagnostic Laparoscopy

Laparoscopy Indications for DL	No. of Patients	Percentage
Pain abdomen for evaluation	32	80
Ascites for evaluation	02	05
Staging Laparoscopy	06	15
Total	40	100

In our series, 32 (80%) patients had pain abdomen as indication for DL and in 2 (5%) patients, it was ascites for evaluation. 6 (15%) patients underwent staging laparoscopy for diagnosed GI malignancy.

Table 4 Diagnosis made after DL (Diagnostic Laparoscopy)

Diagnosis	No. of Patients	Percentage
Koch's abdomen	9	22.5
Chronic appendicitis	3	7.5
Acute Appendicitis	4	10
Adhesions	6	15
PID	2	5.0
Malignancy	8	20
No Definitive Diagnosis	3	7.5
Chocolate Cyst of Ovary	1	2.5
Cirrhosis + PUH	1	2.5
Appendicular Mass	2	5.0
Appendicular mass + PUH	1	2.5

Out of the 40 patients who underwent DL, 9 (22.5%) patients were diagnosed with Koch's abdomen, 8 (20%) with GI malignancy, 6 (15%) with adhesions, 4 (10%) with acute appendicitis, 3 (7.5%) with chronic appendicitis, 2 (5%) each with PID and appendicular mass, one each with chocolate cyst of ovary, cirrhosis + PUH, & appendicular mass with PUH. In 3 (7.5%) patients we could not obtain any definitive diagnosis.

Table 5 Laparoscopic Procedures performed

Laparoscopic Procedure	No. of Patients
Biopsy (Bx)	21
Adhesiolysis (Adh)	5
Appendectomy (App)	6
Bx + App	1
Bx + FJ	1
Adh + App	2
No intervention	4

Laparoscopic biopsy were performed in 21 patients. 6 patients underwent laparoscopic appendectomy and 5 patients laparoscopic adhesiolysis. One patient had feeding jejunostomy performed along with peritoneal biopsy, another had appendectomy performed after adhesiolysis. In 4 cases no intervention was done.

Table 6 Management after DL

MANAGEMENT	NO. OF PATIENTS
Laparoscopic definitive procedure	13
Laparoscopic alternative procedure (Lap assisted FJ)	1
Open surgical intervention	5
Major procedure abandoned	6
Conservative management	15

Fifteen (15) cases had definitive procedure performed laparoscopically, whereas, 5 cases underwent open procedure. In one case alternate procedure was performed laparoscopically - lap assisted feeding jejunostomy for metastatic carcinoma stomach and in 6 cases major procedure was abandoned. Remaining 13 cases were managed conservatively.

Table 7 Effect of DL on Diagnosis

Diagnosis status	No. of Patients	Percentage
Confirmed	05	12.5
Changed	15	37.5
Failed	03	07.5
Diagnosis after DL	17	42.5
total	40	100

DL confirmed pre-operative diagnosis in 5 cases whereas in 15 cases the diagnosis had changed. 17 cases were diagnosed after DL for whom no pre-operative diagnosis was made. In 3 cases DL was normal and no diagnosis could be made.

Table 14 Post-Operative Complications

COMPLICATIONS	NO. PATIENTS	OF PERCENTAGE
Haemorrhage	1	2.5
Wound infection	1	2.5
Total	2	5.0

One patient had bleeding from port site and another patient had wound infection.

4.DISCUSSION

This study “Diagnostic Laparoscopy in doubtful abdominal and pelvic pathologies” is performed in Rajah Muthiah Medical College Hospital between the period of June 2012 - June 2014.

Diagnostic Laparoscopy was performed in patients with undiagnosed abdominal pain, some of the patients with ascites, & few of patients with gastrointestinal malignancy; on the basis of it's results we proceeded to further management, either conservative or surgical intervention. We included patients of all age groups starting from 16 years to 71 years. We had 19 (47.5%) male and 21 (52.5%) female patients.

In our series 32 (80%) patients had pain abdomen as indication for DL and in 2 (5%) patients it was ascites for evaluation. 6 (15%) patients underwent staging laparoscopy for diagnosed GI malignancy. (3 carcinoma stomach, 1 gall bladder carcinoma, 1 Hepatocellular carcinoma (HCC), 1 more suspected HCC which turned out to be Angiosarcoma of liver)

Out of the 40 patients who underwent DL 9 (22.5%) patients were diagnosed with Koch's abdomen, 8 (20%) with GI malignancy, 6 (15%) with adhesions, 4 (10%) with acute appendicitis, 3 (7.5%) with chronic appendicitis, 2 (5%) each with PID and appendicular mass, one each with chocolate cyst of ovary, cirrhosis + PUH, appendicular mass with PUH. In 3 (7.5%) patients we could not reach to any definitive diagnosis.

In all 40 patients of our study, we performed diagnostic laparoscopy and reached to a final definitive diagnosis in 37 (92.5%) patients, which was just confirmation of diagnosis by conventional methods in 5 (12.5%) patients, changed diagnosis in 15 (37.5%) patients and in 17 (42.5%) patients new definitive diagnosis was made.

Only 2 (5%) patients had post-operative complications, out of which 1 had hemorrhage and 1 had wound infection. The wound infection patient had underwent minilaparotomy and adhesiolysis. One out of 5 open patients and 1 out of 35 (2.8%) laparoscopic group had complications. By reducing operative time, exposure to environment and incision length, DL significantly reduces post-operative complication rate.

Conversion Rate

Out of 17 patients in whom we tried to operate laparoscopically, 5 underwent open procedure. One patient underwent minilaparotomy for staging the disease itself because of extensive adhesions, one patient underwent minilaparotomy for adhesiolysis of extensive adhesions, 2 patients underwent open para-umbilical hernia repair and one patient open Feeding Jejunostomy for advanced carcinoma stomach (Linitus Plastica).

We analyzed the histopathological reports of all specimens sent for examination. One case was not supported by histopathology where clinical diagnosis of panniculitis with doubtful lymphoma was made. In one case blind biopsies were taken from peritoneum showed normal tissue and in another case showed reactive hyperplasia.

5.CONCLUSION

Following are the conclusions derived from our study “DIAGNOSTIC LAPAROSCOPY- IN DOUBTFUL ABDOMINAL AND PELVIC PATHOLOGIES “

1. Diagnostic Laparoscopy is helpful in confirming a diagnosis made on clinical grounds and laboratory evaluation.
2. It reduces chances of unnecessary laparotomies.
3. It is superior to imaging modalities like CT abdomen for staging of GI malignancies.
4. It reduces patient suffering by establishing definitive diagnosis and thus early initiation of definitive treatment.
5. It is therapeutic in some of the cases by performing definitive procedure.
6. Diagnostic Laparoscopy is safe, less time consuming, cosmetic with lesser complications and lesser morbidity and mortality.
7. Diagnostic Laparoscopy is specifically important in females of reproductive age group with pain abdomen to confirm or refute pelvic pathology.

BIBLIOGRAPHY

1. Dr. Tl. X. Mishra. History of minimal access surgery. Laparoscopy hospital.com
2. Jansen FW, Kapiteyn K, Trimbos kemper TC et al. complications of laparoscopy; a prospective multicentre observational study. Br J ObstetGynaec 1997; 104:595-600.
3. Keller R, Kleemann M. et al. Diagnostic laparoscopy in acute abdomen (English Abstract). Der chirurg 2006; 77: 981-5
4. Golash V. Willson PD. Early laparoscopy as a routine procedure in the management of acute abdominal pain; a review of 1320 patients. Surg Endoscopy 2005 ; 19: 882-5.
5. Perri SG, Altillia F et al. Laparoscopy in abdominal emergencies. Indications and Limitations. Chir Ital 2002; 54: 165-78.
6. Kerman US, Reddy KR. Diagnostic laparoscopy; an update. Endoscopy 2002; 34:146-53.
7. Boyce HW. Laparoscopy. In: Schiff L, Schiff ER (eds.), Diseases of the Liver. Philadelphia: JB Lippincott 1982; 333-3486.
8. Berci G, Cuschieri A. Practical Laparoscopy. London: Bailliere Tindall, 1986.
9. Mansi C, Savarino V., Picciotta A, et al. Comparison between laparoscopy, ultrasonography and computed tomography in widespread and localized liver disease. Gastrointestinal Endoscopy. 1982; 28:83.
10. Gandolfi L, Rossi A, Leo P, et al. Indications for laparoscopy before and after the introduction of ultrasonography. Gastrointestinal Endoscopy. 1985; 31:1.
11. Brugera J, Rodas P, Rodas J. A comparison of accuracy of peritoneoscopy and liver biopsy in the diagnosis of cirrhosis. Gut. 1974; 15:799.
12. Taner AS, Topgul K, Kucukel F, ET AL: Diagnostic laparoscopy decreases the rate of unnecessary

- laparotomies & reduces hospital costs in trauma patients. *J Laparoendosc Adv Surg Tech* :207-211 '2001.
13. Warshaw AL, Tepper JE, Shipley WU. Laparoscopy in the staging and planning of therapy for pancreatic cancer. *Am J Surg* 1986 ; 151:76-80.
 14. Cuschieri A. Laparoscopy for pancreatic cancer: does it benefit the patient? *Eur J Surg Oncol* 1988; 14: 41-44.
 15. Weber SM, DeMatteo RP, Fong Y et al: Staging laparoscopy in patients with extra-hepatic biliary carcinoma: Analysis of 100 patients. *Ann Surg* 235:392-399, 2002.
 16. Lowy AM, Mansfield PF, Leach SD, et al: Laparoscopic staging for gastric cancer. *Surgery* 119:611-614, 1996.
 17. Burke EC, Karpeh MS, Conlon KC, et al: Laparoscopy in the management of gastric adenocarcinoma. *Ann Surg* 225:262-267, 1997.
 18. Chu CM, Lin SM, Peng SM, Wu CS, Liaw YF. The role of laparoscopy in the evaluation of ascites of unknown origin. *Gastrointest Endosc* 1994;40:285-9.
 19. Coupland G, Townsend D, Martin C. Peritoneoscopy - Use in assessment of intra abdominal malignancy. *Surgery*. 1981; 89:645-649.
 20. Bogen GL, Manino AT, Scott-Conner C. Laparoscopy for staging and palliation of gastrointestinal malignancy. *Surgical Clinics of North America*. 1996; 76(3):557-569.
 21. Gurbuz AT, Peetz ME. The Acute Abdomen in the Pregnant Patient. Is there a role for Laparoscopy? *Surgical Endoscopy*. 1997; 11(2): 98-102.
 22. Halpern NB. Laparoscopic cholecystectomy in pregnancy: A review of published experiences and clinical considerations, *Seminars in Laparoscopic Surgery*, 5(2), June, 1998.
 23. Sozuer EM, Bedirli A, Ulusal M, Kayhan E, Yilmaz Z. Laparoscopy for diagnosis and treatment of acute abdominal pain. *J Laparoendosc Adv Surg Tech A* 2000; 10:203-7.
 24. Cosgrove J, Korman J, Chen M, Chardavoyne K, Cohen J. Laparoscopy for the acute abdomen. *Semin Laparosc Surg* 1996; 3: 131-134.
 25. Boyd Jr WP, Nord HJ. Diagnostic Laparoscopy. *Endoscopy* 2000; 32 : 153-158.
 26. Boujer HJ, Hazebroek EJ, Kazemier G et al. Open versus closed establishment of pneumoperitoneum in laparoscopic surgery. *Br J Surg* 1997;84:599-602.
 27. Bemelman WA, De Wit LT, Busch OR et al. Establishment of pneumoperitoneum with a modified blunt trocar. *J Laparoendosc Adv Surg Tech A* 2000; 10 :217-218.
 28. Philips PA , Amoral JF. Abdominal Access complications in laparoscopic surgery. *J Am Coll Surg* 2001; 192 : 525-536.
 29. Van der Voort N, Heijnsdijk EA, Gouma DJ. Bowel injury as a complication of laparoscopy. *Br J Surg* 2004 ; 91: 1253-1258.
 30. Van Dijkum EJ, de Wit LT, Van Delden OM et al. Staging laparoscopy and laparoscopic ultrasonography in more than 400 patients with upper gastrointestinal carcinoma. *J Am Coll Surg* 1999 ; 189 : 459-465.
