

## ORIGINAL RESEARCH

# Efficiency Of Laparoscopy In Diagnosis And Management Of Acute Nonspecific Abdominal Pain: An Original Research

<sup>1</sup>Dr. Barinder Kumar, <sup>2</sup>Dr. Gopal Sharma, <sup>3</sup>Dr. Veenu Bharti

<sup>1</sup>Assistant Professor, Department of General Surgery, Government Medical College and Associated Hospital, Rajouri, Jammu and Kashmir, India

<sup>2</sup>Assistant Professor, Department of General Surgery, Government Medical College and Associated Hospital, Rajouri, Jammu and Kashmir, India

<sup>3</sup>Diploma Gynaecology and OBS, Government Medical College and Associated Hospital, Rajouri, Jammu and Kashmir, India

**Corresponding author**

**Dr. Barinder Kumar**

Assistant Professor, Department of General Surgery, Government Medical College and Associated Hospital, Rajouri, Jammu and Kashmir, India

Email: [veeru7281@gmail.com](mailto:veeru7281@gmail.com)

## ABSTRACT

**Aim:** Acute nonspecific abdominal pain (NSAP) is frequently encountered in the daily medical practice. This prospective study was performed to elucidate the role of early laparoscopy in the management of NSAP and to compare it with active clinical observation in such cases.

**Methodology:** A total of 100 cases with acute NSAP were randomly divided into two groups: early diagnostic laparoscopy (EDL) group included 50 cases who underwent EDL, and observational group included the remaining 50 cases who were closely observed. Outcome measures included the definitive diagnosis, operative time, duration of hospitalization, and postoperative morbidity.

**Results:** No statistically significant difference was noticed between the study groups regarding demographics. However, the duration of symptoms showed significant prolongation in the observation group. Regarding the final definitive diagnosis, no significant difference was noticed between the two groups ( $P < 0.001$ ). No definite diagnosis was reached in 12 and 52% of cases in the EDL and observation groups, respectively. In the observation group, 18 cases underwent laparoscopic assessment after admission (36%). The duration of hospitalization was significantly prolonged in the observational group. In addition, both recurrence and readmission were more reported in the same group during 15-day and 6-month follow-up visits.

**Conclusion:** Diagnostic laparoscopy appears to be a reliable tool to reach a definite diagnosis in patients with NSAP because of its superior diagnostic ability, better visualization, low complications, and the ability to manage the pathology in the same setting.

**Keywords:** acute nonspecific abdominal pain, laparoscopy, observation.

## INTRODUCTION

Nonspecific chronic abdominal pain is a diagnostic challenge for a clinician. These patients generally visit different physicians and many investigations are done for reaching the diagnosis in this process. Chronic abdominal pain without any specific etiological diagnosis at the end of

diagnostic workup for more than 3 months is called as nonspecific chronic pain abdomen (NCPA).<sup>1–3</sup> It can lead to poor quality of life with appearance of depressive symptoms with time.<sup>4</sup> Surgical consultation is often sought late after other modalities have failed to reach a conclusion or provide relief in their symptomatology. NCPA is a significant clinical problem which accounts for 13 to 40% of all surgical admissions and can often lead to repeated laparotomies.<sup>5</sup> Chronic pelvic pain has a prevalence of 3.8% in young females and it accounts for 10% of all outdoor patients visit to gynecologist and 40% of laparoscopy by gynecologists.<sup>6</sup> The use of laparoscopy in the diagnosis and management of NCPA has been tried in previous studies. The main aim of laparoscopic evaluation in NCPA is to detect the presence or absence of intra-abdominal organic lesion and also it can diagnose as well as treat different intrabdominal pathologies that are difficult to diagnose by other conventional methods.<sup>3</sup> It is a safe and effective tool which can establish the etiology and allows for appropriate intervention at the same time or a better planning in such cases.<sup>7</sup> Adhesions and bands are commonly seen findings, especially in patients with a past history of laparotomy or other abdominal operations.<sup>8</sup> Other findings such as appendicular pathology, hepatobiliary causes, and endometriosis can be discovered and dealt with laparoscopically.<sup>9</sup> The role of laparoscopy for diagnosis in NCPA is still debated by a number of authors who deny its value in adhesiolysis and consider it controversial and not evidence-based, and therefore, do not recommend it as a part of evaluation and treatment in patients with NCPA.<sup>10</sup> Although laparoscopy is very frequently used by surgeons in all fields for a wide spectrum of surgical procedures around the globe, its utility for diagnosis in cases of chronic abdominal pain was not favoured initially, either due to insufficient data on its effectiveness as a diagnostic modality, lack of training or expertise, or lack of awareness among patients and even doctors.<sup>11</sup> Diagnostic laparoscopy when compared to open laparotomy is better in terms of visualization and access with minimal trauma except in some retroperitoneal lesions. Laparoscopy also has limitation of tactile sensations and lesions cannot be palpated as compared to open laparotomy.<sup>12</sup> However, procedure allows quick and thorough inspection of whole peritoneal cavity and pelvic cavity and it is an emerging tool in diagnosis of nonspecific chronic pain abdominal.<sup>13</sup>

### **AIM OF THE PRESENT STUDY**

This prospective study was performed to elucidate the role of early laparoscopy in the management of NSAP and to compare it with active clinical observation in these cases.

### **METHODOLOGY**

This is a prospective comparative randomized study that was conducted starting from October 2021 to October 2022. The study included cases diagnosed with acute NSAP, whose age ranged between 16 and 65 years, and who presented to our emergency department within more than 6 h or within 7 days of onset of symptoms. The definite diagnosis was not established in these cases by routine hematological, biochemical, and radiological investigations. On the contrary, cases reporting acute on top of chronic abdominal pain, pregnancy, malignancy, bleeding diathesis, hemodynamic instability, uncontrolled systemic comorbidities, or having contraindication for laparoscopy were excluded. We included 100 cases during the study period. All cases were subjected to detailed history taking along with complete clinical examination. Laboratory investigations included complete blood count, liver function tests, erythrocyte sedimentation rate, urinalysis, urinary beta human chorionic gonadotropin (in females in the child bearing age), and serum amylase (if pancreatitis was suspected). Pelviabdominal ultrasound was ordered for all cases, whereas pelviabdominal computed tomography was done in selected cases. The included cases were randomly divided into two equal groups: the early diagnostic laparoscopy (EDL) group (50 cases), which was subjected to diagnostic laparoscopy within 24 h of admission, and observations group (50 cases), which

was subjected to active clinical observation. After complete explanation of the pros and cons of every approach, an informed written consent was gathered from all cases. Moreover, our study was approved by the local ethical committee of Al-Azhar University. In the EDL group, pneumoperitoneum was established via either open or the closed techniques. Additional ports were inserted according to the pathology found and therapeutic intervention required. Abdominal exploration was performed starting with left liver lobe, falciform ligament, right liver lobe, gall bladder, stomach, right colon, appendix, ileocecal junction terminal ileum, transverse colon, sigmoid colon, internal female genitalia, and cul-de-sac. When a pathologic finding was detected and needed surgical intervention then it was dealt with accordingly. Appendectomy was performed for appendicitis, whereas excision was done for appendicitis, omental infraction, Meckel's diverticulum, and intraperitoneal lipoma. Moreover, division of the adhesive bands was done in cases of adhesive obstruction, whereas cystectomy was done for complicated ovarian cysts. In addition, salpingotomy was done for ectopic pregnancy. Biopsy specimen obtained were sent for histopathology to confirm the diagnosis. The patients randomized to the observational group were admitted to the surgical ward, where clinical examination was performed twice daily. Additionally, baseline hematological investigations were repeated at 24 and 48 h from admission. Besides, complementary laboratory and/or radiological investigations were ordered based on patient's clinical evaluation and progress. The appropriate medical or surgical intervention was done if the clinical diagnosis was defined. Scheduled follow-up visits were arranged for all cases after 2 weeks, 3 months, and then 6 months. Postoperative complications and duration of hospitalization were recorded. Our primary outcome was the ability to reach a definite diagnosis, while secondary outcomes included duration of operation, duration of hospitalization, and postoperative complications. The statistical tests were performed via IBM SPSS software (version 26.0). Statistical analysis was done using IBM SPSS statistics for windows, Version 25.0. Armonk, NY: IBM Corp. Qualitative data were described using number and percent, whereas quantitative data were described as median and range (for nonparametric data) or mean and SD (for parametric data). To compare between the two groups,  $\chi^2$  test was used for comparison of the two groups, whereas qualitative data was compared via either Student t test or Mann–Whitney U test. For all the performed tests, a P value less than 0.05 was statistically significant.

## RESULTS

The mean age of the included cases was 30.78 and 33.10 years in the EDL and observation groups, respectively. Females represented 66 and 56% of cases in the EDL and observation groups, respectively. No statistically significant difference was noted between the two study groups regarding demographic variables ( $P>0.05$ ). Nevertheless, the duration of symptoms showed a significant prolongation in the observation group (3 vs. 2 days in the EDL group –  $P=0.001$ ). In the EDL group, most cases underwent the operation at the same day of admission (within 12–24 h). The mean operative time was 45.6 min, and one (2%) cases underwent conversion to the open approach. A clinical macroscopic diagnosis was reached in 44 (88%) patients. Laparoscopic appendectomy was done for 21 patients. Regarding postoperative complications, it was not encountered in 76% of cases. In the observation group, a clinical diagnosis was achieved in 24 (48%) cases of 50 patients; 18 (36%) cases underwent laparoscopic assessment after admission either to reach the diagnosis or owing to clinical deterioration or development of sepsis signs. Regarding complications in that group, fever was only encountered in 6% of cases, whereas other cases were free from complications. The duration of hospital stay was significantly prolonged in the observational group (4.22 vs. 2.96 days in the EDL group –  $P<0.001$ ). At 3-month follow-up, seven (14%) patients were lost to follow-up from the EDL group and four (8%) patients from the observation one. At 6-month follow-up, 11 (22%) patients and 14 (28%) patients were missed from the EDL and

observational groups, respectively. Recurrence and admission were more encountered in the observation group compared with the laparoscopy group ( $P=0.046$ ). (Table 1)

**Table 1: Outcome of the cases in the two study groups**

	Groups		Test of significance $t=-6.349 P<0.001$
	EDL group (N=50)	Observation group (N=50)	
Hospital stay	2.96±0.88	4.22±1.09	
Follow-up at 15 days [n (%)]			
Recurrent pain	0	7 (14)	
Recurrent pain leading to readmission	0	6 (12)	
Referred to gastroenterology	2 (4)	3 (6)	
Referred to gynaecology	0	6 (12)	
Follow-up at 3 months [n (%)]			
Recurrent symptoms	4 (8)	9 (18)	
Readmission	1 (2)	3 (6)	
Missed patients	7 (14)	4 (8)	
Follow-up at 6 months [n (%)]			
Recurrent symptoms	1 (2)	5 (10)	
Readmission	0	2 (4)	
Missed patients	11 (22)	14 (28)	

\*EDL, early diagnostic laparoscopy,  $P < .001$  both significant.

## DISCUSSION

NCPA is a frequent problem, dealt with by different medical specialists. Even after an extensive workup in some patients, no specific cause or pathological condition is found by use of noninvasive investigation, and the pain is often attributed to unsubstantiated diagnosis. Despite of advanced diagnostic machinery with sophisticated methodology to image abdominal contents, establishment of a diagnosis prior to surgery remains difficult for several conditions. Unnecessary or negative laparotomy is painful, increases hospital stay, increases hospital cost, and is associated with a morbidity of 5 to 20%. In the current study, the included cases had mean age of 30.78 and 33.10 years in the EDL and observation groups, respectively. No significant difference was detected between the two groups concerning that parameter ( $P=0.331$ ). Sharma et al. reported that the mean age of the included cases was 30.83 years.<sup>14</sup> Moreover, Al-Bareeq and Dayna reported that the included cases had an average age of 31 years.<sup>15</sup> Both of the previous studies reported mean age similar to our findings. Our results revealed that laparoscopy was successful in achieving diagnosis in 24 (48%) patients of observational group cases, whereas 18 (36%) cases in the same group needed laparoscopy in the same admission. However, 26 (52%) observational cases were discharged from hospital after improvement with no definite diagnosis. Another advantage of laparoscopy that should be kept in mind that it also provides the advantage of simultaneous management of the detected pathology at the same operative setting, such as ovarian cysts, which could be properly

managed by laparoscopy.<sup>16</sup> Additionally, abdominal collections could be drained, adhesions could be safely dissected, and inflamed appendix could be excised. Furthermore, early identification of certain pathologies like PID enables early treatment, which decreases the rates of future infertility.<sup>17</sup> Active clinical observation alone is not sufficient to get a definitive diagnosis in cases with NSAP; other non-invasive investigation must be used during the period of observation within a limited period to decrease the hospitalization period, decrease the morbidity rates, and improve the diagnostic accuracy.

## CONCLUSION

Diagnostic laparoscopy appears to be a reliable tool to reach a definite diagnosis in patients with NSAP because of its superior diagnostic ability, better visualization, low complications, and the ability to manage the pathology in the same setting.

## REFERENCES

1. Camilleri M. Management of patients with chronic abdominal pain in clinical practice. *Neurogastroenterol Motil* 2006;18(7):499–506. DOI: 10.1111/j.1365-2982.2005.00744.x.
2. Townsend CO, Sletten CD, Bruce BK, et al. Physical and emotional functioning of adult patients with chronic abdominal pain: comparison with patients with chronic back pain. *J Pain* 2005;6(2): 75–83. DOI: 10.1016/j.jpain.2004.10.009.
3. Paajanen H, Julkunen K, Waris H. Laparoscopy in chronic abdominal pain. A prospective nonrandomized long-term follow-up study. *J Clin Gastroenterol* 2005;39(2):110 –114. DOI: 10.1097/01.mcg.0000150174.88953.6e.
4. Magni G, Rossi MR, Rigatti-Luchini S, et al. Chronic abdominal pain and depression. Epidemiologic findings in the United States. Hispanic health and nutrition examination survey. *Pain* 1992;49(1):77–85. DOI: 10.1016/0304-3959(92)90191-D.
5. Irvin TT. Abdominal pain: a surgical audit of 1190 emergency admissions. *Br J Surg* 1989;76(11):1121–1125. DOI: 10.1002/bjs.1800761105.
6. Reiter RC. Chronic pelvic pain. *Clin Obstet Gynaecol* 1990;33(1): 130–136. DOI: 10.1097/00003081-199003000-00018.
7. Onders RP, Mittendorf EA. Utility of laparoscopy in chronic abdominal pain. *Surgery* 2003;134(4):552–554. DOI: 10.1016/s0039- 6060(03)00277-0.
8. Szomstein S, Lo Menzo E, Simpfendorfer C, et al. Laparoscopic lysis of adhesions. *World J Surg* 2006;30(4):535–540. DOI: 10.1007/s00268- 005-7778-0.
9. Salky BA, Edey MB. The role of laparoscopy in the diagnosis and treatment of abdominal pain syndromes. *Surg Endosc* 1998;12(7): 911–914. DOI: 10.1007/s004649900744.
10. Swank DJ, Swank-Bordewijk SC, Hop WC, et al. Laparoscopic adhesiolysis in patients with chronic abdominal pain: a blinded randomised controlled multi-centre trial. *Lancet* 2003;361(9365): 1247–1251. DOI: 10.1016/s0140-6736(03)12979-0.
11. Nar AS, Bawa A, Mishra A, et al. Role of diagnostic laparoscopy in chronic abdominal conditions with uncertain diagnosis. *Niger J Surg* 2014;20(2):75–78. DOI: 10.4103/1117-6806.137301.
12. Perri SG, Altillia F, Pietrangeli F, et al. Laparoscopy in abdominal emergencies. Indications and limitations. *Chir Ital* 2002;54(2):165–178.
13. Kerman US, Reddy KR. Diagnostic laparoscopy; an update. *Endoscopy* 2002;34(2):146–153. DOI: 10.1055/s-2002-19847
14. Sharma A, Sethi D, Sethi A. Laparoscopy: a tool for undiagnosed pain abdomen. *Int Surg J* 2018; 5:3350–3355.
15. Al-Bareeq R, Dayna KB. Diagnostic laparoscopy in acute abdominal pain: 5-year retrospective series. *Bahrain Med Bull* 2007; 29:1–5.

16. Gaitan H, Angel E, Sanchez J, Gomez I, Sanchez L, Agudelo C. Laparoscopic diagnosis of acute lower abdominal pain in women of reproductive age. *Int J Gynecol Obstetr* 2002; 76:149–158.
17. Poulin EC, Schlachta CM, Mamazza J. Early laparoscopy to help diagnose acute non-specific abdominal pain. *The Lancet* 2000; 355:861–863.