Section: Surgical Gastroenterology

Original Research Article

UTILITY OF PRE-OPERATIVE UPPER GASTROINTESTINAL EGD IN ADULT PATIENTS UNDERGOING LAPAROSCOPIC CHOLECYSTECTOMY – A PILOT PROSPECTIVE OBSERVATIONAL COMPARATIVE STUDY

Dharmendra B.L[1], Shrivathsa Merta K[2], Srinidhi Manjunath[3]

[1]Associate Professor, Department of Surgical Gastroenterology, Mysore Medical College and Research Institute, Mysuru, Karnataka, India
[2]Assistant Professor, Department of Surgical Gastroenterology, Mysore Medical College and Research Institute, Mysuru, Karnataka, India
[3]Assistant Professor, Department of Surgical Oncology, Mysore Medical College and Research Institute, Mysuru, Karnataka, India

Received : 12/03/2026
Received in revised form : 04/05/2026
Accepted : 20/05/2026

Keywords:
Laparoscopic cholecystectomy; cholelithiasis; esophagogastroduodenoscopy; atypical biliary symptoms; post-cholecystectomy syndrome; upper gastrointestinal pathology.

Corresponding Author:
Dr. Shrivathsa Merta K,
Email: shrivathsa1987@gmail.com

DOI: 10.47009/jamp.2026.8.3.98

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2026; 8 (3); 542-546

ABSTRACT

Background: Persistent upper abdominal symptoms following laparoscopic cholecystectomy may result from coexisting upper gastrointestinal (UGI) pathologies that mimic biliary colic. Preoperative esophagogastroduodenoscopy (EGD) has been proposed as a useful investigation to identify such conditions; however, its routine use before laparoscopic cholecystectomy remains controversial. The objective is to determine the association between preoperative EGD findings and postoperative symptom resolution following laparoscopic cholecystectomy. Secondary objectives included assessing the prevalence of atypical gastrointestinal symptoms and the proportion of abnormal EGD findings among such patients. **Materials and Methods:** This pilot prospective observational comparative study was conducted in the Department of Surgical Gastroenterology at Mysore Medical College and Research Institute over 12 months. Fifty adult patients with symptomatic cholelithiasis scheduled for elective laparoscopic cholecystectomy underwent preoperative EGD. Patients were categorized into normal and abnormal EGD groups based on endoscopic findings. All patients subsequently underwent standard laparoscopic cholecystectomy. Postoperative symptom resolution was assessed at 2 months follow-up. Data were analyzed using descriptive statistics and Chi-square test, with $p < 0.05$ considered statistically significant. **Result:** Among the 50 enrolled patients, 42 were available for final analysis. The mean age of the study population was 38.32 years, with female predominance (80%). Typical biliary symptoms were present in 81% of patients, while 38% had atypical gastrointestinal symptoms. Abnormal EGD findings were observed in 54.8% of patients, with gastritis being the most common abnormality (35.7%). Among patients with atypical symptoms, 68.7% demonstrated abnormal EGD findings. Symptom resolution following laparoscopic cholecystectomy was observed in 75% of patients with normal EGD findings compared to 63.6% of those with abnormal EGD findings. However, the difference was not statistically significant ($\chi^2 = 0.632$, $p = 0.426$). **Conclusion:** Abnormal preoperative EGD findings were common among patients with symptomatic cholelithiasis, particularly in those presenting with atypical gastrointestinal symptoms. Although postoperative symptom resolution was higher in patients with normal EGD findings, no statistically significant association was observed. Selective rather than routine preoperative EGD may be beneficial in patients with atypical symptoms to identify coexisting upper gastrointestinal pathology.

INTRODUCTION

Gallstone disease is among the most frequently encountered hepatobiliary disorders and continues to be an important indication for abdominal surgery worldwide. Indian epidemiological studies have demonstrated that gallstone disease affects a considerable proportion of the adult population, with a higher occurrence among women.[1,2] The

widespread adoption of laparoscopic cholecystectomy (LC) has significantly improved the management of symptomatic cholelithiasis because of reduced postoperative pain, shorter hospitalization, and earlier return to normal activity.[3] Despite these advantages, a subset of patients continue to report persistent abdominal complaints even after technically successful cholecystectomy.[4]

Persistent or recurrent upper abdominal symptoms after LC are often grouped under the term post-cholecystectomy syndrome. These symptoms may arise from overlooked upper gastrointestinal disorders such as gastritis, gastroesophageal reflux disease, peptic ulcer disease, or hiatus hernia that coexist with gallstone disease and clinically resemble biliary pain.5 Earlier studies have shown that a substantial number of patients undergoing evaluation for cholecystectomy demonstrate abnormal findings on upper gastrointestinal endoscopy (EGD).[5,6] Gastritis has consistently emerged as the most common abnormality, while reflux esophagitis and peptic ulcer disease are also frequently encountered.[6,7]

The role of routine preoperative EGD before laparoscopic cholecystectomy remains debated. Certain investigators have suggested that EGD may help identify non-biliary causes of symptoms, thereby minimizing unnecessary surgery and reducing postoperative symptom persistence.[8,9] In contrast, other studies and systematic reviews have reported that routine EGD may provide limited additional benefit in patients presenting with classical biliary colic.5 Consequently, current evidence favors a selective approach, particularly in individuals presenting with atypical symptoms such as epigastric discomfort, dyspepsia, heartburn, nausea, or water brash.[10] Patients with such symptoms have been shown to possess a greater likelihood of abnormal endoscopic findings and persistent symptoms after surgery.[7,10]

Although several studies have evaluated the diagnostic utility of EGD in symptomatic cholelithiasis, prospective data correlating symptom profile, endoscopic findings, and postoperative symptom resolution remain limited, especially in the Indian setting. Therefore, the present study was undertaken to determine the prevalence of abnormal preoperative EGD findings in patients undergoing laparoscopic cholecystectomy and to assess their relationship with postoperative symptom relief.

MATERIALS AND METHODS

This pilot prospective observational comparative study was conducted in the Department of Surgical Gastroenterology at Mysore Medical College and Research Institute (MMC&RI), Mysore, Karnataka, over a period of 12 months. The study aimed to evaluate the utility of preoperative esophagogastroduodenoscopy (EGD) in patients undergoing laparoscopic cholecystectomy for symptomatic cholelithiasis.

Adult patients aged 18 years and above who were diagnosed with cholelithiasis and scheduled for elective laparoscopic cholecystectomy were included in the study. Patients presenting with typical biliary symptoms such as right upper quadrant pain, dyspepsia, nausea, and bloating were considered eligible. Patients with a history of previous upper gastrointestinal surgery, known gastrointestinal malignancy, acute cholecystitis requiring emergency intervention, severe comorbid conditions precluding endoscopy, or those unwilling to provide informed consent were excluded from the study.

All enrolled patients underwent preoperative esophagogastroduodenoscopy as part of their routine evaluation. The procedure was performed using a standard flexible endoscope under appropriate sedation in accordance with institutional protocols. Based on the endoscopic findings, patients were categorized into two groups: those with normal EGD findings and those with abnormal findings, including conditions such as gastritis, esophagitis, peptic ulcer disease, or other upper gastrointestinal pathologies.

Following endoscopic evaluation, all patients underwent standard four-port laparoscopic cholecystectomy under general anaesthesia. The procedures were performed by experienced surgeons using uniform operative techniques. Intraoperative findings and any perioperative complications were recorded systematically.

The primary outcome of the study was the resolution of preoperative symptoms following laparoscopic cholecystectomy. Secondary outcomes included the prevalence of abnormal EGD findings, the association between endoscopic findings and presenting symptoms, and the persistence of symptoms in the postoperative period.

Patients were followed up for a period of atleast 2 months after surgery. Follow-up assessments were conducted through outpatient visits and/or telephonic interviews to evaluate symptom resolution or persistence.

Data were entered into Microsoft Excel and analyzed using SPSS version 22.0 (IBM SPSS Statistics, Somers, NY, USA). Categorical variables were expressed as frequencies and percentages, the Chi-square test was applied for categorical data. A p-value of less than 0.05 was considered statistically significant.

The study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Approval was obtained from the Institutional Ethics Committee of MMC&RI, and written informed consent was obtained from all participants prior to inclusion in the study.

RESULTS

A total of 50 patients with symptomatic cholelithiasis were enrolled in the study. The study population

ISSN (O): 2687-5365; ISSN (P): 2753-6556

demonstrated a marked female predominance, with females constituting 80% of cases, while males accounted for 20%. The mean age of the participants was 38.32 years. Right hypochondrial pain was the most common presenting symptom, observed in 76% of patients, followed by epigastric pain in 64%. Other commonly reported symptoms included heartburn, vomiting, and back pain, each present in 30% of patients. Water brash and belching were reported in 24% and 18% of patients, respectively. Considerable overlap in symptomatology was noted among the study participants [Table 1].

Table 1: Baseline Demographic and Clinical Characteristics of the Study Population (n = 50)

	Variable	Frequency (n)	Percentage (%)
Sex Distribution	Male	10	20%
	Female	40	80%
Age Distribution	Mean age ± SD (years)	38.32 ± 4.56	
Presenting Symptoms	Right hypochondrial pain	38	76%
	Epigastric pain	32	64%
	Heartburn	15	30%
	Vomiting	15	30%
	Back pain	15	30%
	Water brash	12	24%
	Belching	9	18%

*Multiple symptoms were present in several patients; therefore, percentages may exceed 100%.

Table 2: Symptom Pattern and Preoperative Upper Gastrointestinal Endoscopy (EGD) Findings Among Patients Included for Final Analysis (n = 42)

	Variable	Frequency (n)	Percentage (%)
Symptom Classification	Typical biliary symptoms	34	81%
	Atypical gastrointestinal symptoms	16	38%
EGD Findings	Normal EGD	19	45.2%
	Abnormal EGD	23	54.8%
Specific Abnormal EGD Findings	Antral gastritis/gastritis	15	35.7%
	Hiatus hernia	3	7.1%
	Reflux esophagitis	3	7.1%
	Bile reflux into stomach	2	4.8%
	D2 sessile polyp	1	2.4%
	Gastric fundus ulcer	1	2.4%
	Peptic stricture of lower esophagus	1	2.4%

Note: Patients with hiatus hernia also demonstrated associated reflux esophagitis.

Table 3: Association Between Atypical Symptoms and Abnormal EGD Findings (n = 16)

EGD Finding	Patients with Atypical Symptoms, n	Percentage (%)
Normal EGD	5	31.3
Abnormal EGD	11	68.7
Total	16	100

Interpretation: A higher proportion of patients presenting with atypical gastrointestinal symptoms demonstrated abnormal preoperative EGD findings.

Table 4: Comparison of Symptom Resolution Following Laparoscopic Cholecystectomy According to EGD Findings (n = 42)

EGD Finding Group	Resolved Symptoms (n)	Persistent Symptoms (n)	Total Evaluated (n)	Chi-square value	P value
Normal EGD	15(75%)	5(25%)	20	0.6324	0.426
Abnormal EGD	14(63.64%)	8(36.36%)	22		
Total Cohort	29	13	42		

Chi Square test

Among the 42 patients included in the final analysis, typical biliary symptoms were present in 81% of patients, whereas atypical gastrointestinal symptoms were observed in 38% of cases. Preoperative upper gastrointestinal endoscopy revealed abnormal findings in 54.8% of patients, while 45.2% had normal endoscopic findings. Gastritis or antral gastritis was the most frequent abnormality, identified in 35.7% of patients. Other abnormalities included hiatus hernia and reflux esophagitis (7.1% each), bile reflux into the stomach (4.8%), Duodenum 2nd part sessile polyp (2.4%), gastric fundus ulcer (2.4%), and peptic stricture of the lower esophagus (2.4%). Patients with hiatus hernia also demonstrated associated reflux esophagitis [Table 2]. Among patients presenting with atypical gastrointestinal symptoms, abnormal EGD findings were observed in 68.7% of cases, whereas only 31.3% had normal endoscopic findings. This indicates a higher prevalence of upper gastrointestinal pathology among patients with atypical symptomatology [Table 3].

Postoperative assessment following laparoscopic cholecystectomy demonstrated symptom resolution in 75% of patients with normal preoperative EGD findings, compared to 63.6% of patients with abnormal EGD findings. Persistent postoperative

ISSN (O): 2687-5365; ISSN (P): 2753-6556

symptoms were observed in 25% and 36.4% of patients in the normal and abnormal EGD groups, respectively. However, statistical analysis using the Chi-square test showed that the observed difference was not statistically significant ($\chi^2 = 0.632$, df = 1, p = 0.426), indicating no significant association between preoperative EGD findings and postoperative symptom resolution [Table 4].

DISCUSSION

The present prospective observational study assessed the clinical utility of preoperative upper gastrointestinal endoscopy in patients undergoing laparoscopic cholecystectomy for symptomatic cholelithiasis. The mean age of the participants was 38.32 years, and female patients constituted the majority of the study population. This demographic pattern is consistent with previously published Indian studies demonstrating a greater burden of gallstone disease among women.[1,2]

Most patients in the present study presented with typical biliary symptoms, whereas atypical gastrointestinal complaints were observed in more than one-third of the cohort. Similar symptom distribution patterns have been described in earlier studies evaluating symptomatic cholelithiasis.[6] The coexistence of biliary and dyspeptic symptoms often complicates the identification of the primary pathology responsible for abdominal pain.

More than half of the patients in the present study demonstrated abnormal findings on preoperative EGD. Gastritis represented the most common endoscopic abnormality, followed by reflux-related pathology. These observations are in agreement with previous reports and systematic reviews that identified gastritis as the predominant upper gastrointestinal lesion among patients evaluated before cholecystectomy.[5,7,9] The systematic review by Lamberts et al.5 also emphasized that a substantial proportion of patients referred for LC harbour associated upper gastrointestinal pathology.

An important finding in the current study was the higher prevalence of abnormal EGD findings among patients with atypical symptoms. Nearly two-thirds of patients with atypical symptomatology demonstrated abnormal endoscopic findings. This supports previous evidence suggesting that atypical gastrointestinal complaints are more likely to be associated with significant upper gastrointestinal disease.[10] Brahmbhatt et al,[10] similarly reported a high frequency of abnormal EGD findings among patients presenting with atypical symptoms before cholecystectomy.

The rate of postoperative symptom resolution was numerically greater in patients with normal EGD findings compared to those with abnormal EGD findings. However, the difference did not achieve statistical significance. The lack of statistical significance may be related to the relatively small sample size and low statistical power of the present pilot study. Nevertheless, the trend toward persistent postoperative symptoms among patients with abnormal EGD findings suggests that untreated coexisting upper gastrointestinal disorders may contribute to post-cholecystectomy symptoms. Similar concerns have been raised in previous studies evaluating the role of preoperative endoscopy in reducing postoperative symptom persistence.[3,8]

The findings of the present study support the selective use of preoperative EGD rather than routine screening in all patients planned for laparoscopic cholecystectomy. Patients with atypical symptoms appear more likely to benefit from endoscopic evaluation because of the higher probability of associated upper gastrointestinal pathology.[5,9] Appropriate identification and treatment of these conditions may improve postoperative symptom control and patient satisfaction.

Certain limitations of the study should be acknowledged. The study was conducted at a single center with a relatively small sample size, thereby limiting the external validity of the findings. In addition, the post hoc statistical power was low, increasing the possibility of a type II statistical error. Larger multicentric prospective studies are therefore required to establish stronger evidence regarding the role of selective preoperative EGD in patients undergoing laparoscopic cholecystectomy.

CONCLUSION

The present study demonstrated that abnormal preoperative upper gastrointestinal endoscopy findings were common among patients undergoing laparoscopic cholecystectomy, particularly in those presenting with atypical gastrointestinal symptoms. Although patients with normal EGD findings showed better postoperative symptom resolution compared to those with abnormal findings, the difference was not statistically significant. Gastritis was the most frequently observed endoscopic abnormality. The findings support a selective rather than routine use of preoperative EGD, especially in patients with atypical symptoms, as identification and treatment of coexisting upper gastrointestinal pathology may help reduce persistent postoperative symptoms and improve overall patient outcomes following cholecystectomy.

REFERENCES

1. Siddiqui MA, Dwivedi N, Siddiqui MH, Rana SV, Sharma A, Dash NR, et al. NMR spectroscopy-based analysis of gallstones of cancerous and benign gallbladders from different geographical regions of the Indian subcontinent. PLoS One. 2023;18(6):e0286979.
2. Unisa S, Jagannath P, Dhir V, Khandelwal C, Sarangi L, Roy TK. Population-based study to estimate prevalence and determine risk factors of gallbladder diseases in the rural Gangetic basin of North India. HPB (Oxford). 2011;13(2):117-25.
3. Al-Khyatt W, Rashid F, Iftikhar SY. Diagnostic value of upper gastrointestinal endoscopy prior to cholecystectomy. In: Amornyotin S, editor. Endoscopy of GI Tract [Internet].

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Rijeka: InTech; 2013 [cited 2026 Mar 31]. Available from: http://www.intechopen.com/books/endoscopy-of-gi-tract/diagnostic-value-of-upper-gastrointestinal-endoscopy-prior-to-cholecystectomy. doi:10.5772/52520.
4. Mohan KC, Gopalaswamy V, Ghalige HS, Raj P, Muniyappa S, Suggaiah L, et al. Utility of preoperative upper gastrointestinal endoscopy in reducing post-cholecystectomy syndrome: an analytical cross-sectional study [Internet]. SJHR Africa. 2025 [cited 2026 Apr 2];6(9). Available from: https://sjhresearchafrica.org/index.php/public-html/article/view/2007. doi:10.51168/sjhrafrica.v6i9.2007.
5. Lamberts MP, Kievit W, Özdemir C, Westert GP, van Laarhoven CJHM, Drenth JPH. Value of endoscopy in patients referred for cholecystectomy: a systematic review and meta-analysis. Gastrointest Endosc. 2015;82(1):24-31. doi:10.1016/j.gie.2015.01.024.
6. Karmacharya A, Malla B, Joshi H, Gurung R, Rajbhandari M. The predictive value of pre-operative symptoms including upper gastrointestinal endoscopy before laparoscopic cholecystectomy for elective symptomatic cholelithiasis. Kathmandu Univ Med J (KUMJ). 2013;11(44):300-4. doi:10.3126/kumj.v11i4.12526.
7. Kunnuru SKR, Kanmaniyan B, Thiyagarajan M, Singh BK, Navrathan N. A study on efficacy of upper gastrointestinal scopy in cholelithiasis patients before laparoscopic cholecystectomy. Minim Invasive Surg. 2021;2021:8849032. doi:10.1155/2021/8849032.
8. Dimitriou I, Reckmann B, Nephuth O, Betzler M. Stellenwert der routinemäßigen präoperativen Ösophagogastroduodenoskopie vor elektiver Cholezystektomie. Zentralbl Chir. 2012;137(1):38-42. German. doi:10.1055/s-0030-1247365.
9. Kolla V, Charles N, Datey S, Mahor D, Gupta A, Malhotra S. Upper gastrointestinal endoscopy prior to laparoscopic cholecystectomy: a clinical study at a tertiary care centre in central India. Int Surg J. 2016;3(2):637-42. doi:10.18203/2349-2902.isj20161136.
10. Brahmbhatt H, Pundeer S, Bhatia P, Goel K, Garg U. Diagnostic value of upper gastrointestinal endoscopy prior to cholecystectomy in a tertiary care institute. J Evol Med Dent Sci. 2020;9(11):817-21. doi:10.14260/jemds/2020/177.

ISSN (O): 2687-5365; ISSN (P): 2753-6556