

EFFICACY OF UPPER GI ENDOSCOPY PRIOR TO ELECTIVE CHOLECYSTECTOMY FOR SYMPTOMATIC CHOLELITHIASIS PATIENTS

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ABSTRACT

Background: Symptomatic cholelithiasis, characterized by biliary colic and dyspeptic symptoms, often co-exists with upper gastrointestinal (GI) pathologies, complicating clinical management. Routine upper GI endoscopy (UGI scopy) prior to elective cholecystectomy may identify treatable conditions, potentially reducing postoperative symptoms. This study aimed to assess the di-agnostic yield of UGI scopy and its impact on postoperative symptom reduction in patients with symptomatic cholelithiasis. **Materials and Methods:** A prospective analytical study was conducted at Government Dharmapuri Medical College and Hospital, Tamil Nadu, India, from September 2023 to February 2025. Patients with ra-diologically confirmed symptomatic cholelithiasis, aged 18–60 years, underwent UGI scopy before elective cholecystectomy. Patients were divided into Group A (normal EGD, n=14) and Group B (abnormal EGD, n=46). Data on demographics, preoperative symptoms, UGI findings, and postoperative outcomes (pain scores, non-pain symptoms, patient satisfaction) were collected over 18 months. **Results:** The study population had a mean age of 42.3 ± 10.5 years, with 70% female (female-to-male ratio 2.3:1). Preoperative symptoms included biliary colic (80%), dyspepsia (60%), nau-sea/vomiting (40%), flatulence/belching (30%), and atypical pain (20%). UGI scopy revealed abnormalities in 76.7% of patients, with gastritis (43.5%), lax lower oesophageal sphincter (32.6%), duodenitis (21.7%), gastric ulcer (8.7%), and hiatus hernia (2.2%) most common. Preoperative pain scores were higher in Group B (mean 2.33 vs. 2.21, $p=0.04$), persisting at 1-week post-cholecystectomy ($p<0.001$), but equalized by 4–6 weeks ($p>0.05$). Non-pain symp-toms significantly reduced in Group B by 6 weeks (dyspepsia 6.5%, $p<0.0005$; nau-sea/vomiting 2.2%, $p<0.001$). Patient satisfaction was higher in Group B (8.3 vs. 6.8, $p<0.01$), with fewer GI consultations (4.3% vs. 7.1%). **Conclusion:** Routine UGI scopy prior to cholecystectomy has a high diagnostic yield, identifying coexist-ing upper GI pathologies in most patients with symptomatic cholelithiasis. Preoperative diagnosis and treatment of these conditions significantly reduce postoperative pain and non-pain symptoms, enhancing patient satisfaction and minimizing post-cholecystectomy syndrome. These findings support integrating UGI scopy into standard preoperative evaluation for optimised clinical outcomes.

INTRODUCTION

Cholelithiasis, or gallstone disease, is a significant public health concern globally and in India, with prevalence rates ranging from 2% to 29% across diverse populations. In India, regional variations are notable, with North India reporting higher rates (4–29%) compared to South India (2–4%), attributed to dietary patterns, genetic predispositions, and environmental factors. Approximately 20% of individuals with gallstones develop symptomatic cholelithiasis, characterized by episodic right upper

quadrant or epigastric pain (biliary colic), nausea, vomiting, and dyspepsia, often triggered by fatty meals. These symptoms significantly impair quality of life, prompting medical intervention, with elective cholecystectomy being the definitive treatment for symptomatic cases. Laparoscopic cholecystectomy, introduced in the late 1980s, has become the gold standard due to its minimally invasive nature, reduced recovery time, and lower morbidity compared to open surgery.^[1] Despite the efficacy of cholecystectomy, with symptom resolution in 80–90% of patients, a notable

proportion (10–40%) experience persistent or recurrent symptoms post-surgery, a condition termed post-cholecystectomy syndrome (PCS). PCS encompasses a spectrum of symptoms, including abdominal pain, dyspepsia, bloating, and heartburn, which may arise from non-biliary causes such as concurrent upper gastrointestinal (GI) pathologies. Common upper GI conditions, such as gastritis, peptic ulcer disease (PUD), gastroesophageal reflux disease (GERD), and, rarely, upper GI malignancies, can present with symptoms that overlap with or mimic those of symptomatic cholelithiasis, complicating preoperative diagnosis. In India, the high prevalence of *Helicobacter pylori* infection (50–80%) exacerbates this challenge, as *H. pylori*-related gastritis and PUD are frequently encountered in patients with gallstone disease. These overlapping symptoms underscore the need for a thorough preoperative evaluation to identify and manage coexisting pathologies, potentially improving postoperative outcomes and reducing PCS.^[2]

Upper GI endoscopy (esophagogastroduodenoscopy or EGD) is a cornerstone diagnostic and therapeutic tool in gastroenterology, enabling direct visualization, biopsy, and treatment of the oesophagus, stomach, and duodenum. In the context of symptomatic cholelithiasis, preoperative EGD is employed to evaluate dyspeptic symptoms, detect upper GI abnormalities, and guide perioperative management, such as *H. pylori* eradication or proton pump inhibitor (PPI) therapy. Studies report that 20–70% of cholelithiasis patients undergoing EGD have abnormal findings, with 10–30% revealing clinically significant pathologies requiring specific interventions, such as severe gastritis, PUD, or Barrett's oesophagus. For instance, a South Indian study found that 54% of patients had abnormal EGD findings, with *H. pylori* gastritis in 25% of cases, highlighting the procedure's diagnostic yield. In regions with high *H. pylori* prevalence, such as India, preoperative EGD may be particularly valuable, as treating *H. pylori*-related conditions can reduce postoperative symptoms and improve patient satisfaction.^[3]

However, the routine use of EGD before elective cholecystectomy remains a subject of debate. While EGD is safe, with a complication rate of 0.1–0.5% (e.g., bleeding, perforation, sedation risks), its cost, resource demands, and variable diagnostic yield raise questions about its necessity in all patients. The American Society for Gastrointestinal Endoscopy (ASGE) recommends selective EGD for patients with dyspepsia, GERD symptoms, or alarm features (e.g., weight loss, anaemia, or dysphagia), as routine EGD often detects non-significant findings (e.g., mild gastritis) that do not alter surgical management. In contrast, proponents of routine EGD argue that identifying and treating upper GI pathologies preoperatively can minimize PCS, reduce unnecessary cholecystectomies in patients with non-biliary symptom sources, and detect rare but critical conditions like gastric cancer. In India, where

healthcare resources are often limited and diagnostic access varies between urban and rural settings, the cost-effectiveness of routine versus selective EGD is a critical consideration.^[4]

The Indian healthcare landscape adds complexity to this issue. High *H. pylori* prevalence, coupled with rising obesity and westernized diets, contributes to a dual burden of gallstone disease and upper GI disorders. Furthermore, the increasing incidence of cholelithiasis in younger populations, driven by lifestyle changes, underscores the need for optimized preoperative protocols to ensure surgical success. Preoperative EGD may offer advantages by enabling concurrent treatment of oesophageal and gastric pathologies, potentially reducing postoperative pain, dyspepsia, and other symptoms. For example, *H. pylori* eradication before surgery has been shown to improve symptom resolution rates by 60–70% in patients with concurrent gastritis. However, evidence on the long-term impact of preoperative EGD on postoperative outcomes, particularly in the Indian context, remains limited, necessitating further research to guide clinical practice.

By evaluating its diagnostic yield and clinical impact, the study aims to determine whether routine EGD is justified or if a selective approach is more appropriate, particularly in resource-constrained settings. Additionally, the research explores the benefits of diagnosing and treating associated upper GI pathologies preoperatively, with a focus on reducing postoperative pain and other symptoms, thereby enhancing patient outcomes and quality of life.^[5]

Aims and Objectives

Aim:

To assess the efficacy of routine upper GI endoscopy (UGI scopy) prior to elective cholecystectomy in patients with symptomatic cholelithiasis, focusing on its diagnostic yield and impact on postoperative symptom reduction through the identification and treatment of concurrent oesophageal and gastric pathologies.

Objectives

- To evaluate the value of UGI scopy as routine investigative tool prior to cholecystectomy in symptomatic cholelithiasis patients.
- To determine the advantages of the preoperative diagnosis and concurrent treatment of associated oesophageal and gastric pathologies with symptomatic cholelithiasis in view of postoperative pain and other symptoms reduction.

MATERIALS AND METHODS

Study Design: This study is designed as a prospective analytical study to evaluate the efficacy of upper gastrointestinal (UGI) endoscopy (esophagogastroduodenoscopy or EGD) prior to elective cholecystectomy in patients with symptomatic cholelithiasis. The prospective design

allows for systematic data collection over an 18-month period, enabling the assessment of diagnostic yield and clinical outcomes associated with preoperative EGD. The analytical approach facilitates the comparison of outcomes between patients with and without significant EGD findings, addressing the study's objectives of evaluating UGI scopy as a routine investigative tool and determining its impact on postoperative symptom reduction.

Study Setting: The study is conducted at the Department of General Surgery, Government Dharmapuri Medical College and Hospital (GDMCH), Dharmapuri, Tamil Nadu, India. GDMCH is a tertiary care center serving a diverse population, with a high prevalence of cholelithiasis and *Helicobacter pylori*-related upper GI disorders, making it an ideal setting for this research.

Study Population: The study population consists of 60 patients with radiologically confirmed symptomatic cholelithiasis scheduled for elective cholecystectomy. The sample size is determined based on prior studies reporting a 20–70% diagnostic yield of preoperative EGD, with an estimated 50% prevalence of significant findings, a 95% confidence level, and a 10% margin of error, yielding a minimum sample of 60 patients. Patients are recruited consecutively to minimize selection bias.

Study Duration and Period: The study spans 18 months, from September 2023 to February 2025. This duration includes patient recruitment (12 months), data collection, surgical intervention, postoperative follow-up (up to 3 months post-surgery), and data analysis. The timeline ensures adequate sample accrual and follow-up to assess short-term postoperative outcomes.

Inclusion Criteria

- Patients with radiologically confirmed cholelithiasis (via transabdominal ultrasonography) presenting with symptoms such as typical biliary colic (right upper quadrant pain), atypical pain, dyspepsia, flatulence, vomiting, nausea, or belching.
- Age between 18 and 60 years.
- Willingness to participate in the study and provide informed consent.

Exclusion Criteria

- Patients younger than 18 years or older than 60 years.
- Patients with complications of cholelithiasis, including acute cholecystitis, choledocholithiasis, cholangitis, or gallstone pancreatitis.
- Pregnant females, due to potential risks of EGD and surgery.
- Patients unwilling to undergo UGI scopy or participate in the study.

Participant Recruitment: Patients presenting to the Department of General Surgery, GDMCH, with symptoms suggestive of cholelithiasis are screened using transabdominal ultrasonography to confirm gallstones. Those meeting the inclusion criteria are

informed about the study's purpose, procedures, risks, and benefits. Written informed consent is obtained in the patient's preferred language (Tamil or English), ensuring comprehension. Patients are enrolled consecutively until the target sample size of 60 is reached, minimizing selection bias.

Data Collection

Baseline Data

- **Demographic Details:** Age, sex, and body mass index (BMI) are recorded to assess potential confounders.
- **Clinical History:** Symptoms (e.g., biliary colic, dyspepsia, nausea) are documented using a standardized questionnaire, including frequency, severity, and duration.
- **Diagnostic Tests:** Results of ultrasonography (gallstone size, number, gallbladder wall thickness) and baseline laboratory tests (liver function tests, complete blood count) are collected to confirm uncomplicated cholelithiasis.
- **Comorbidities:** Conditions like diabetes or hypertension are noted, as they may influence postoperative outcomes.

UGI Endoscopy (Intervention)

- All enrolled patients undergo preoperative UGI scopy, performed by a trained endoscopic surgeon using a high-definition endoscope. The procedure follows standard protocols:
- **Preparation:** Patients fast for 6–8 hours. Conscious sedation (e.g., midazolam 2–5 mg IV) or topical anaesthesia (lidocaine spray) is used based on patient tolerance.
- **Procedure:** The endoscope is inserted through the mouth to examine the esophagus, stomach, and duodenum. Findings are recorded, including esophagitis, gastritis, PUD, Barrett's oesophagus, or malignancy. Biopsies are taken for suspected *H. pylori* infection (rapid urease test or histopathology) or other pathologies.
- **Treatment:** Significant findings (e.g., *H. pylori* gastritis, PUD) are treated preoperatively with standard regimens, such as triple therapy (PPI, amoxicillin, clarithromycin) for *H. pylori* or PPIs for ulcers, as per Maastricht V guidelines.

Cholecystectomy: Patients undergo elective laparoscopic cholecystectomy (LC) within 4–6 weeks of EGD, allowing time for treatment of significant EGD findings. LC is performed by experienced surgeons using a four-port technique, adhering to the critical view of safety to minimize bile duct injury. Intraoperative details, such as operative time, conversion to open surgery, or complications, are recorded.

Postoperative Follow-Up

Patients are followed up at 1 week, 4 weeks, and 12 weeks post-cholecystectomy to assess symptom resolution and complications:

- **Symptoms:** Pain, dyspepsia, nausea, and other symptoms are evaluated using the same

standardized questionnaire as baseline, with severity scored on a Likert scale (0–10).

- **Complications:** Surgical site infections, bile leaks, or other adverse events are documented.
- **Quality of Life:** A validated tool, such as the Gastrointestinal Symptom Rating Scale (GSRS), assesses postoperative quality of life.

Outcome Measures

Primary Outcomes

- **Diagnostic Yield of EGD:** Proportion of patients with abnormal EGD findings, categorized as significant (requiring treatment, e.g., PUD, H. pylori gastritis) or non-significant (e.g., mild gastritis).
- **Postoperative Symptom Reduction:** Change in symptom severity (pain, dyspepsia, nausea) from baseline to 12 weeks post-cholecystectomy, comparing patients with treated significant EGD findings versus those without.

Secondary Outcomes

- **Treatment Impact:** Proportion of patients requiring preoperative treatment (e.g., H. pylori eradication) and its effect on surgical timing or outcomes.
- **Complications:** Incidence of EGD-related (e.g., bleeding, perforation) and surgical

complications (e.g., bile duct injury, wound infection).

- **Quality of Life:** Improvement in GSRS scores at 12 weeks post-cholecystectomy.

Statistical Analysis

The analysis plan included

- **Descriptive Statistics:** Demographic and clinical characteristics (e.g., age, sex, symptom prevalence) summarized using means (SD) for continuous variables and frequencies (%) for categorical variables.
- **Diagnostic Yield:** Proportion of patients with significant and non-significant EGD findings calculated with 95% confidence intervals.
- **Symptom Reduction:** Paired t-tests or Wilcoxon signed-rank tests used to compare pre- and postoperative symptom scores. Independent t-tests or Mann-Whitney U tests used to compare symptom reduction between patients with treated EGD findings versus those without.
- **Associations:** Chi-square tests or Fisher's exact tests used for assessing associations between EGD findings and postoperative outcomes (e.g., symptom resolution, complications).
- **Significance Level:** A p-value <0.05 is considered statistically significant.

RESULTS

Table 1: Age and Sex Distribution of Study Population

Age Group (Years)	Number, N	Percentage, %
18–30	14	23.3%
31–40	12	20%
41–50	10	16.7%
51–60	24	40%
Total	60	100%
SEX	NUMBER, N	PERCENTAGE, %
Male	18	30%
Female	42	70%

The age distribution of patients enrolled in the study ranged from 18 to 60 years, reflecting the inclusion criteria set for the study population.

- **Most patients (40%) belonged to the 51–60 years age group**, indicating that symptomatic cholelithiasis is more prevalent in the older segment within the selected age range.
- The second most common age group was 18–30 years, contributing to **23.3%** of the total patients, followed by 31–40 years (**20%**) and 41–50 years (**16.7%**).
- The data highlights that while cholelithiasis can occur in younger adults, its frequency increases

with age, peaking in the fifth and sixth decades of life.

The table also shows that a total of 60 patients diagnosed with symptomatic cholelithiasis were evaluated. Among them:

- **42 patients (70%) were female**, making them the predominant sex in the study cohort.
- **18 patients (30%) were male.**

This distribution highlights a clear female preponderance, with a female-to-male ratio of approximately 2.3:1.

Table 2: Age and Sex Distribution of Symptomatic Cholelithiasis Patients

Age Group (Years)	Group A (Normal EGD) n (%)	Group B (Abnormal EGD) n (%)
18–30	4 (28.6%)	10 (21.7%)
31–40	3 (21.4%)	9 (19.6%)
41–50	2 (14.3%)	8 (17.4%)
51–60	5 (35.7%)	19 (41.3%)
Total	14 (23.3%)	46 (76.7%)
Sex		
Male	4 (28.6%)	14 (30.4%)
Female	10 (71.4%)	32 (69.6%)

Mean Age: 42.3 ± 10.5 years; Male: Female Ratio: 1:2.3

This table presents the age and sex distribution of the 60 patients, divided into Group A (normal EGD, n=14) and Group B (abnormal EGD, n=46). The

mean age of 42.3 years re-reflecting a middle-aged population prone to cholelithiasis. The female predominance (70%) supporting the higher incidence in females due to hormonal factors. The majority of patients (40%) were in the 51–60 age group.

Table 3: Preoperative Symptoms in Study Population

Study Population			Symptomatic Cholelithiasis Patients			
Symptom	Number, N	Percentage, %	Total (n=60)	Group A (Normal EGD, n=14)	Group B (Abnormal EGD, n=46)	p-value
Biliary Colic	48	80%	48 (80.0%)	12 (85.7%)	36 (78.3%)	0.53
Dyspepsia	36	60%	36 (60.0%)	6 (42.9%)	30 (65.2%)	0.14
Nausea/Vomiting	24	40%	24 (40.0%)	4 (28.6%)	20 (43.5%)	0.31
Flatulence/Belching	18	30%	18 (30.0%)	3 (21.4%)	15 (32.6%)	0.41
Atypical Pain	12	20%	12 (20.0%)	2 (14.3%)	10 (21.7%)	0.53

The presenting symptoms among patients with symptomatic cholelithiasis in this study showed considerable variation, reflecting the spectrum of clinical manifestations associated with gallstone disease:

- Biliary colic was the most common presenting complaint, reported by 48 patients (80%). This classic symptom, characterized by right upper quadrant pain, is typical of symptomatic gallbladder disease and often prompts patients to seek medical attention.
- Dyspepsia was the second most frequent symptom, observed in 36 patients (60%). Dyspeptic symptoms such as upper abdominal discomfort, bloating, and early satiety are common in gallstone disease and may coexist with or mimic symptoms of other upper GI conditions.
- Nausea and/or vomiting were reported by 24 patients (40%), indicating the impact of gallstones on digestive function and biliary obstruction-related irritation.

- Flatulence or belching was present in 18 patients (30%), which may overlap with dyspeptic complaints, further complicating the clinical picture.
- Atypical pain, such as diffuse upper abdominal discomfort not classically described as biliary colic, was reported by 12 patients (20%), highlighting the variable presentation of gallstone disease.

This table details the preoperative symptom profile, comparing Group A and Group B. Biliary colic was the most common symptom (80%). Dyspepsia was prevalent in 60% of patients, higher in Group B (65.2%) than Group A (42.9%), though not statistically significant (p=0.14), suggesting overlap with upper GI pathologies. Nausea/vomiting (40%) and flatulence/belching (30%) were also common, with higher prevalence in Group B. Atypical pain was less frequent (20%). The lack of significant differences between groups (p>0.05) indicates that symptoms alone cannot reliably distinguish between biliary and upper GI causes, supporting the need for EGD.

Table 4: UGI Scopy Findings in Group B Patients

Finding	Number of Patients (n=46)	Percentage (%)
Gastritis	20	43.5%
Lax LES	15	32.6%
Duodenitis	10	21.7%
Gastric Ulcer	5	8.7%
Hiatus Hernia	1	2.2%

Note: Some patients had multiple findings

Among the 60 patients who underwent routine upper gastrointestinal (UGI) endoscopy prior to elective cholecystectomy, 46 patients (76.7%) showed positive findings, indicating a high diagnostic yield for detecting coexisting upper GI pathologies.

- Gastritis was the most prevalent finding, detected in 20 patients (43.5%). This supports the known association between gallstone disease and gastritis, either as a coexisting condition or as a contributor to overlapping dyspeptic symptoms.
- A lax lower esophageal sphincter (LES) was observed in 15 patients (32.6%), suggestive of gastroesophageal reflux disease (GERD) or

increased reflux tendency. This may explain symptoms such as belching, retrosternal discomfort, or atypical upper abdominal pain reported by some patients.

- Duodenitis was identified in 10 patients (21.7%), indicating inflammation of the duodenal mucosa which could contribute to persistent upper abdominal discomfort.
- Gastric ulcer was found in 5 patients (8.7%), highlighting the importance of endoscopy in identifying significant lesions that require medical management prior to surgery.
 - Hiatus hernia was detected in 1 patient (2.2%), an incidental but clinically relevant

finding that can contribute to reflux symptoms.

Table 5: Comparison of Preoperative and Postoperative Pain Scores

Pain Score (VAS 0–5)	Preoperative	1st Week Post-op	4th Week Post-op	6th Week Post-op
Group A (n=14)				
0	1 (7.1%)	10 (71.4%)	12 (85.7%)	14 (100%)
1	2 (14.3%)	4 (28.6%)	2 (14.3%)	0 (0%)
2	6 (42.9%)	0 (0%)	0 (0%)	0 (0%)
3	5 (35.7%)	0 (0%)	0 (0%)	0 (0%)
4	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Mean ± SD	2.21 ± 0.80	0.29 ± 0.47	0.14 ± 0.36	0.00 ± 0.00
Group B (n=46)				
0	2 (4.3%)	8 (17.4%)	38 (82.6%)	43 (93.5%)
1	8 (17.4%)	24 (52.2%)	8 (17.4%)	3 (6.5%)
2	20 (43.5%)	12 (26.1%)	0 (0%)	0 (0%)
3	14 (30.4%)	2 (4.3%)	0 (0%)	0 (0%)
4	2 (4.3%)	0 (0%)	0 (0%)	0 (0%)
Mean ± SD	2.33 ± 0.85	1.13 ± 0.74	0.17 ± 0.38	0.07 ± 0.25
p-value (Group A vs. B)	0.04*	<0.001**	0.78	0.31

*Significant at $p < 0.05$; **Highly significant at $p < 0.01$ (Mann-Whitney U test).

This table compares pain scores (Visual Analog Scale, 0–5) preoperatively and at 1, 4, and 6 weeks post-cholecystectomy. Preoperative pain scores were higher in Group B (mean 2.33 vs. 2.21, $p = 0.04$), indicating that upper GI pathologies contribute to increased pain. At 1-week post-op, Group B had significantly higher pain scores ($p < 0.001$), likely due

to untreated or resolving upper GI issues. By 4 and 6 weeks, pain scores equalized ($p > 0.05$), suggesting that medical management (e.g., PPIs, H. pylori eradication) in Group B effectively reduced pain to levels comparable to Group A. The confirms significant pain reduction within each group ($p < 0.0005$).

Table 6: Comparison of Other Preoperative and Postoperative Symptoms

Symptom	Group A Pre-op (n=14)	Group B Pre-op (n=46)	Group A 6th Week Post-op	Group B 6th Week Post-op	p-value (Pre vs. Post, Group B)
Dyspepsia	6 (42.9%)	30 (65.2%)	1 (7.1%)	3 (6.5%)	<0.0005**
Nausea/Vomiting	4 (28.6%)	20 (43.5%)	0 (0%)	1 (2.2%)	<0.001**
Flatulence/Belching	3 (21.4%)	15 (32.6%)	0 (0%)	2 (4.3%)	<0.01*
Atypical Pain	2 (14.3%)	10 (21.7%)	0 (0%)	1 (2.2%)	<0.05*

*Significant at $p < 0.05$; **Highly significant at $p < 0.01$ (Wilcoxon signed-rank test).

This table compares non-pain symptoms pre- and post-cholecystectomy, focusing on Group B's response to concurrent treatment. Preoperative dyspepsia was more prevalent in Group B (65.2%) than Group A (42.9%). At 6 weeks post-op, dyspepsia reduced significantly in Group B (6.5%, $p < 0.0005$), as did nausea/vomiting (2.2%, $p < 0.001$),

flatulence/belching (4.3%, $p < 0.01$), and atypical pain (2.2%, $p < 0.05$). Group A also showed significant reductions, but Group B's greater improvement underscores the benefit of treating upper GI pathologies identified by EGD, preventing post-cholecystectomy syndrome.

Table 7: Postoperative Outcomes by EGD Findings

Outcome Parameter	Group A (Normal EGD, n=14)	Group B (Abnormal EGD, n=46)	p-value
Persistent Dyspepsia (%)	1 (7.1%)	3 (6.5%)	0.93
Persistent Pain (%)	0 (0%)	3 (6.5%)	0.33
Patient Satisfaction Score (0–10)	6.8 ± 1.5	8.3 ± 1.2	<0.01**
Need for Additional GI Consultation (%)	1 (7.1%)	2 (4.3%)	0.68

This table compares postoperative outcomes. Persistent dyspepsia and pain were low in both groups (7.1% and 0% in Group A vs. 6.5% and 6.5% in Group B), with no significant differences ($p > 0.05$). Patient satisfaction was significantly higher in Group B (8.3 vs. 6.8, $p < 0.01$), reflecting the benefit of addressing upper GI pathologies. The low need for additional GI consultations (7.1% vs. 4.3%) suggests that EGD reduces postoperative investigations, supporting its role in comprehensive management.

DISCUSSION

This study evaluated 60 patients with symptomatic cholelithiasis undergoing routine upper gastrointestinal (UGI) endoscopy prior to elective cholecystectomy, focusing on demographic characteristics, preoperative symptoms, UGI endoscopy findings, and postoperative outcomes. Patients were divided into Group A (normal EGD, $n = 14$) and Group B (abnormal EGD, $n = 46$), enabling a comparative analysis of outcomes based on the

presence of coexisting upper gastrointestinal pathologies.^[6]

Demographic Characteristics:

The study population had a mean age of 42.3 ± 10.5 years, with 40% of patients in the 51–60 years' age group, followed by 18–30 years (23.3%), 31–40 years (20%), and 41–50 years (16.7%). This age distribution suggests that symptomatic cholelithiasis is more prevalent in older adults, particularly in the fifth and sixth decades, though younger adults are also affected, possibly due to rising obesity and dietary risk factors. The female-to-male ratio was 2.3:1, with 70% of patients being female, consistent with the known epidemiology of gallstone disease, where hormonal factors such as estrogen increase bile lithogenicity.^[7]

Preoperative Symptoms

Biliary colic was the most common symptom, reported by 80% of patients, aligning with the classic presentation of gallstone disease characterized by episodic right upper quadrant pain. Dyspepsia observed in 60% of patients, was more prevalent in Group B (65.2%) than Group A (42.9%), though the difference was not statistically significant ($p=0.14$). This overlap suggests that dyspeptic symptoms may arise from coexisting upper GI pathologies rather than gallstones alone. Other symptoms included nausea/vomiting (40%), flatulence/belching (30%), and atypical pain (20%), reflecting the diverse clinical manifestations of cholelithiasis. The lack of significant differences in symptom profiles between groups indicates that clinical presentation alone cannot reliably distinguish biliary from upper GI causes, supporting the need for preoperative endoscopy.^[8]

UGI Endoscopy Findings

Routine UGI endoscopy revealed positive findings in 76.7% of patients (Group B), highlighting a high diagnostic yield for detecting coexisting upper GI pathologies. Gastritis was the most common finding (43.5%), followed by a lax lower esophageal sphincter (LES) suggestive of gastroesophageal reflux disease (GERD) (32.6%), duodenitis (21.7%), gastric ulcer (8.7%), and hiatus hernia (2.2%). The high prevalence of gastritis aligns with studies linking gallstone disease to *Helicobacter pylori* infection, a common cause of upper GI inflammation in Indian populations. The presence of GERD-related findings and gastric ulcers underscores the importance of endoscopy in identifying treatable conditions that may contribute to overlapping symptoms and complicate postoperative recovery.

Postoperative Outcomes

At 1 week post-cholecystectomy, Group B had significantly higher pain scores ($p<0.001$), but by 4 and 6 weeks, scores equalized between groups ($p>0.05$), suggesting effective medical management (e.g., proton pump inhibitors, *H. pylori* eradication) in Group B. Non-pain symptoms, including dyspepsia, nausea/vomiting, flatulence/belching, and atypical pain, showed significant reductions in Group

B by 6 weeks post-op ($p<0.05$ to $p<0.0005$), with greater improvements compared to Group A. This highlights the benefit of addressing upper GI pathologies to prevent post-cholecystectomy syndrome.

Patient satisfaction was significantly higher in Group B (mean score 8.3 vs. 6.8, $p<0.01$), reflecting the positive impact of treating coexisting conditions identified by EGD. The low incidence of persistent dyspepsia and pain (6.5–7.1%) and minimal need for additional GI consultations (4.3–7.1%) further support the role of routine preoperative EGD in optimizing outcomes and reducing postoperative investigations.^[9]

Key Implications

The high prevalence of coexisting upper GI pathologies and their impact on symptom severity and postoperative outcomes justify the inclusion of routine UGI endoscopy in the preoperative evaluation of symptomatic cholelithiasis patients. The findings emphasize the need for tailored medical management post-cholecystectomy to address non-biliary causes of symptoms, thereby reducing the risk of post-cholecystectomy syndrome and improving patient satisfaction.

Summary

This prospective analytical study, conducted at the Department of General Surgery, Government Dharmapuri Medical College and Hospital (GDMCH), Tamil Nadu, India, evaluated the efficacy of routine upper gastrointestinal (UGI) endoscopy prior to elective cholecystectomy in 60 patients with radiologically confirmed symptomatic cholelithiasis. The study aimed to assess the diagnostic yield of UGI endoscopy and its impact on postoperative symptom reduction through the identification and treatment of concurrent oesophageal and gastric pathologies. Patients were divided into two groups based on UGI endoscopy findings: Group A (normal EGD, $n=14$) and Group B (abnormal EGD, $n=46$).

The study population had a mean age of 42.3 ± 10.5 years, with 40% in the 51–60 years age group, 23.3% in 18–30 years, 20% in 31–40 years, and 16.7% in 41–50 years, indicating higher prevalence in older adults. A female-to-male ratio of 2.3:1 (70% female) highlighted female preponderance, consistent with hormonal risk factors. Preoperative symptoms included biliary colic (80%), dyspepsia (60%), nausea/vomiting (40%), flatulence/belching (30%), and atypical pain (20%). Dyspepsia was more prevalent in Group B (65.2%) than Group A (42.9%), though not statistically significant ($p=0.14$), suggesting overlap with upper GI pathologies.

UGI endoscopy revealed abnormal findings in 76.7% of patients (Group B), demonstrating high diagnostic yield. Gastritis was the most common finding (43.5%), followed by lax lower oesophageal sphincter (32.6%), duodenitis (21.7%), gastric ulcer (8.7%), and hiatus hernia (2.2%). These findings underscore the prevalence of coexisting upper GI pathologies, often linked to *Helicobacter*

pylori infection, which may contribute to overlapping symptoms.

Preoperative pain scores (Visual Analog Scale, 0–5) were significantly higher in Group B (mean 2.33 vs. 2.21, $p=0.04$), reflecting the impact of upper GI pathologies. At 1 week post-cholecystectomy, Group B had higher pain scores ($p<0.001$), but by 4 and 6 weeks, scores equalized ($p>0.05$), indicating effective medical management (e.g., proton pump inhibitors, H. pylori eradication) in Group B. Non-pain symptoms, including dyspepsia (6.5%), nausea/vomiting (2.2%), flatulence/belching (4.3%), and atypical pain (2.2%), significantly reduced in Group B by 6 weeks ($p<0.05$ to $p<0.0005$), with greater improvements compared to Group A. Patient satisfaction was significantly higher in Group B (mean 8.3 vs. 6.8, $p<0.01$), and the need for additional GI consultations was low (7.1% in Group A, 4.3% in Group B).

CONCLUSION

The findings support routine UGI endoscopy as a valuable investigative tool, identifying treatable upper GI pathologies that contribute to symptom severity. Addressing these conditions pre- and post-cholecystectomy significantly reduces pain and non-pain symptoms, minimizes post-cholecystectomy syndrome, and enhances patient satisfaction. The results align with regional and international literature, though variations highlight dietary and genetic influences. This study advocates for integrating UGI endoscopy into the standard preoperative workup for

symptomatic cholelithiasis to optimize clinical outcomes.

REFERENCES

1. Khedkar I., Prasad D., Datta A. Diagnostic value of upper gastrointestinal endoscopy prior to elective laparoscopic cholecystectomy for symptomatic cholelithiasis. *International Surgery Journal*. 2017;5(1):105–109.
2. Jackson P. G., Steven R., Evans T. *Biliary System: Sabiston's Text Book of Surgery*. 19th. Amsterdam, Netherlands: Elsevier; 2012.
3. Berger MY, olde Hartman TC, Van der Velden JJ, Bohnen AM. Is biliary pain exclusively related to gallbladder stones? A controlled prospective study. *Br J Gen Pract*. 2004;54(505):574-9.
4. Kraag N, Thijs C, Knipschild P. Dyspepsia-how noisy are gallstones? A meta-analysis of epidemiologic studies of biliary pain, dyspeptic symptoms, and food intolerance. *Scand J Gastroenterol*. 1995;30(5):411-21.
5. Gupta P, Gupta V, Singh SP, Singh SP, Mishra SP, Singh P, et al. Role of routine upper GI endoscopy in patients of cholelithiasis presenting with dyspepsia in rural set-up. *Int Surg J*. 2016;3:509-15.
6. Yavorski CC, Acosta JA, Ragland JJ. Precholecystectomy esophagogastroduodenoscopy: is it of value? *Am Surg*. 1995 Dec;61(12):1032-4.
7. Sosada K, Zurawinski W, Piecuch J, Stepień T, Makarska J. Gastroduodenoscopy: a routine examination of 2,800 patients before laparoscopic cholecystectomy. *Surg Endosc*. 2005 Aug;19(8):1103-8.
8. Kunnuru SK, Kanmaniyan B, Thiagarajan M, Singh BK, Navrathan N. A Study on Efficacy of UGI Scopy in Cholelithiasis Patients before Laparoscopic Cholecystectomy. *Minimally Invasive Surgery*. 2021 Jan 13;2021.
9. Karmacharya A, Malla BR, Joshi HN, Gurung RB, Rajbhandari M. The Predictive Value of Pre-Operative Symptoms Including Upper Gastrointestinal Endoscopy Before Laparoscopic Cholecystectomy for Elective Symptomatic Cholelithiasis. *Kathmandu Univ Med J*. 2013;44(4):300-304.