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Is Preoperative Upper Gastrointestinal Endoscopy Necessary Before Cholecystectomy?

Murat Aba[1], Levent Bolat[2]

[1]Selahaddin Eyyubi State Hospital, General Surgery Department, Diyarbakır, Türkiye
[2]Osmaniye State Hospital, General Surgery Department, Osmaniye, Türkiye

ABSTRACT

Introduction: Cholecystectomy is one of the most frequently performed surgical procedures for the treatment of gallbladder diseases. However, the persistence of symptoms or the emergence of new gastrointestinal complaints in some patients post-cholecystectomy remains a notable concern. The literature indicates an increased incidence of alkaline reflux gastritis in the long term following cholecystectomy. Nevertheless, the preoperative status of the gastric mucosa and the presence of Helicobacter pylori (H. pylori) infection in these patients have not been sufficiently investigated.
Objective: This study aims to evaluate preoperative upper gastrointestinal endoscopy (UGIE) findings in patients undergoing cholecystectomy to determine the prevalence of chronic gastritis and H. pylori infection. Additionally, we seek to analyze the association between preoperative findings and the persistence of postoperative symptoms, thereby contributing to clinical strategies for post-cholecystectomy patient management.
Methods: In this retrospective study, 465 patients who underwent cholecystectomy within the past year were reviewed. Among these, 50 patients (29 female, 21 male) who had undergone preoperative UGIE were included. Of the 465 patients reviewed, only those who had undergone preoperative UGIE and met the inclusion criteria (laparoscopic cholecystectomy, no gastrointestinal malignancy) were included, resulting in a final cohort of 50 patients. Demographic characteristics and endoscopic biopsy results were analyzed. Statistical evaluation was performed using SPSS software.
Results: The study cohort of 50 patients comprised 56% females and 44% males, with a mean age of 42.3 ± 12.1 years. Chronic gastritis was identified in 68% of patients, and H. pylori positivity was detected in 52%.
Conclusions: Preoperative evaluation of gastric mucosa and consideration of H. pylori eradication in patients undergoing cholecystectomy may hold clinical significance for managing postoperative symptoms. Routine preoperative endoscopy may be beneficial in identifying patients at risk for persistent postoperative symptoms.

Keywords: Cholecystectomy, Endoscopy, Dyspepsia, Gastritis.

INTRODUCTION

Gallstones are a common condition, affecting approximately 10–15% of the general population. Although cholecystectomy is an effective treatment for symptomatic gallstones, a considerable proportion of patients experience persistent postoperative symptoms such as dyspepsia, epigastric pain, and alkaline reflux gastritis. In cases reported as post-cholecystectomy syndrome in the literature, symptoms persist in 5–40% of patients in the long term, and approximately 10% develop chronic complaints. The exact mechanism underlying these persistent symptoms remains unclear; however, factors such as increased duodenogastric reflux (the backflow of biliary and pancreatic contents into the stomach), gastric motility disorders, and dysfunction of the sphincter of Oddi are thought to play a role.

Helicobacter pylori (H. pylori) is a bacterium that causes chronic inflammation of the gastric mucosa and is associated with serious conditions such as gastritis, peptic ulcer, and gastric cancer. H. pylori infection is a common cause of dyspeptic symptoms and may contribute to the persistence of symptoms after cholecystectomy. Literature reports indicate an increase in both reflux gastritis and H. pylori positivity after cholecystectomy. Studies have shown that among patients who were H. pylori-positive preoperatively, the number increased from seven before surgery to fifteen postoperatively, accompanied by a marked increase in gastritis prevalence (1). Observational studies and meta-analyses have also demonstrated a high incidence of biliary reflux gastritis following cholecystectomy, suggesting that H. pylori infection and the severity of inflammation may be important factors in symptom persistence (2).

Corresponding Author: Levent Bolat, e-mail: levent_268@hotmail.com
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In the present study, the relationship between preoperative H. pylori positivity and the severity of inflammation was investigated through endoscopic evaluation, and the association of these findings with the persistence of postoperative symptoms was assessed. We hypothesized that preoperative detection and eradication of H. pylori, as well as identification of significant gastric mucosal inflammation, could reduce the persistence of postoperative symptoms in cholecystectomy patients.

METHODS

This retrospective, descriptive study was conducted on patients who underwent cholecystectomy at our hospital between January 2024 and January 2025. A total of 50 patients (29 females [58%], 21 males [42%]) who had undergone preoperative upper gastrointestinal (GI) endoscopy were included. To ensure homogeneity in terms of age, sex, and surgical technique, only cases of laparoscopic cholecystectomy were evaluated; patients who underwent open cholecystectomy or had a history of concomitant gastrointestinal malignancy were excluded.

Demographic data (age, sex), presenting symptoms (dyspepsia, epigastric pain, weight loss, etc.), family history, and smoking status were obtained from the electronic medical record system. Histopathological findings detected during preoperative upper GI endoscopy—such as chronic gastritis, Helicobacter pylori (H. pylori) positivity, inflammation severity (mild, moderate, severe), dysplasia, atrophy, and metaplasia—were recorded from endoscopy and pathology reports. The presence of H. pylori in gastric mucosal biopsies was evaluated using hematoxylin–eosin staining and, when necessary, Giemsa staining. Findings were reported in accordance with the Sydney classification system (3,4).

This study was approved by the Ethics Committee of the University of Health Sciences, Gazi Yaşargil Training and Research Hospital (Approval No: 418, Date: April 11, 2024) and was conducted in accordance with the principles of the Declaration of Helsinki.

Statistical Analysis

Data were analyzed using SPSS (Statistical Package for the Social Sciences), version 24.0. Categorical variables were presented as frequencies (n) and percentages (%), while continuous variables were expressed as mean ± standard deviation (SD). For comparisons between groups, the Chi-square test was used for categorical variables, and Fisher's Exact test was applied when cell frequencies were insufficient. For continuous variables, the independent samples t-test was used for normally distributed data, whereas the Mann–Whitney U test was applied for non-normally distributed data. In addition, Spearman's correlation analysis was performed to assess the relationship between age and histopathological findings, and logistic regression analysis was conducted to examine factors influencing the persistence of postoperative symptoms. A p-value of < 0.05 was considered statistically significant.

RESULTS

Among the 50 patients included in the study, 56% were female and 44% were male, with a mean age of 42.3 ± 12.1 years. Endoscopic examinations revealed chronic gastritis in 68% of patients and H. pylori positivity in 52%. Regarding the severity of inflammation, mild inflammation was observed in 40% of cases, moderate inflammation in 38%, and severe inflammation in 22% (Table 1).

Table 1. Comparison of Clinical Findings Between H. pylori Positive and Negative Groups

Variable	H. pylori Positive (n=26)	H. pylori Negative (n=24)	p-value
Chronic gastritis	22 (84.6%)	12 (50.0%)	0.008*
Inflammation severity			0.012*
Mild	6 (23.1%)	14 (58.3%)	
Moderate	12 (46.2%)	7 (29.2%)	
Severe	8 (30.8%)	3 (12.5%)	
Dysplasia	4 (15.4%)	2 (8.3%)	0.432
Atrophy	3 (11.5%)	2 (8.3%)	0.734
Metaplasia	2 (7.7%)	1 (4.2%)	0.589

Note: *p < 0.05 was considered statistically significant. Analysis was performed using the Chi-square test or Fisher's Exact Test.

In patients who were H. pylori positive, the severity of inflammation was found to be significantly higher (p = 0.012). Among H. pylori positive patients, 62% had moderate or severe inflammation, whereas this rate was 28% in H. pylori negative patients (Table 2).

Table 2. Relationship Between Inflammation Severity and H. pylori Positivity

Inflammation Severity	H. pylori Positive (n=26)	H. pylori Negative (n=24)	Total (n=50)
Mild	6 (23.1%)	14 (58.3%)	20 (40%)
Moderate	12 (46.2%)	7 (29.2%)	19 (38%)
Severe	8 (30.8%)	3 (12.5%)	11 (22%)
Total	26 (100%)	24 (100%)	50 (100%)

p-value: 0.012* (Fisher's Exact Test).
Note: The proportion of severe inflammation was significantly higher in H. pylori positive patients.

In patients who smoked, the rate of H. pylori positivity was found to be significantly higher (p = 0.023) (Table 3).

Table 3. Relationship Between Smoking Status and H. pylori Positivity

Smoking Status	H. pylori Positive (n=26)	H. pylori Negative (n=24)
Yes	16 (61.5%)	8 (33.3%)
No	10 (38.5%)	16 (66.7%)

In addition, among patients with dyspeptic complaints, the severity of inflammation was also found to be significantly higher (p = 0.026) (Table 4).

Table 4. Relationship Between Presenting Complaint and Inflammation Severity

Inflammation Severity	Dyspepsia (n=28)	Epigastric Pain (n=14)	Weight Loss (n=8)
Mild	10 (35.7%)	8 (57.1%)	2 (25.0%)
Moderate	12 (42.9%)	4 (28.6%)	3 (37.5%)
Severe	6 (21.4%)	2 (14.3%)	3 (37.5%)

A significant association was found between age and the severity of inflammation (p = 0.045). In the 51+ age group, the proportion of severe inflammation (18.2%) was higher compared to other age groups. In the 20–30 age group, the proportion of mild inflammation (40.0%) was the highest (Table 5).

Table 5. Distribution of Inflammation Severity by Age Group

Age Group	Mild Inflammation (n=20)	Moderate Inflammation (n=19)	Severe Inflammation (n=11)	Total (n=50)
20–30 years	8 (40.0%)	5 (26.3%)	2 (18.2%)	15 (30%)
31–40 years	6 (30.0%)	7 (36.8%)	3 (27.3%)	16 (32%)
41–50 years	4 (20.0%)	5 (26.3%)	4 (36.4%)	13 (26%)
51+ years	2 (10.0%)	2 (10.5%)	2 (18.2%)	6 (12%)
Total	20 (100%)	19 (100%)	11 (100%)	50 (100%)

p-value: 0.045* (Kruskal–Wallis Test).
Note: The proportion of severe inflammation increased with advancing age.

DISCUSSION

This study examined the relationship between preoperative endoscopic findings, particularly H. pylori positivity and the severity of inflammation. The findings suggest that H. pylori infection induces significant inflammatory processes in the gastric mucosa, which may play an important role in the persistence of postoperative symptoms in patients undergoing cholecystectomy.

Our study demonstrated that patients with H. pylori infection had a significantly higher severity of gastric inflammation (p = 0.012). Specifically, 62% of H. pylori positive patients exhibited moderate or severe inflammation, whereas this rate was 28% among H. pylori negative patients (Table 2). These results support the established association between H. pylori infection and chronic gastric mucosal inflammation, gastritis, and other gastrointestinal disorders (5). Notably, H. pylori is known to stimulate the release of pro-inflammatory cytokines in the stomach, which contributes to increased inflammatory severity (6). Therefore, detecting and eradicating H. pylori during preoperative endoscopic evaluation is essential to reduce the risk of persistent postoperative symptoms.

In this study, the rate of chronic gastritis was found to be significantly higher in patients with H. pylori infection (p = 0.008). Specifically, chronic gastritis was detected in 84.6% of H. pylori positive patients, compared to 50% of H. pylori negative patients (Table 1). This observation highlights that H. pylori is one of the primary etiological factors of chronic gastritis, in agreement with previous literature (7). Chronic gastritis may lead to prolonged inflammation of the gastric mucosa, thereby contributing to the persistence of dyspeptic symptoms. Consequently, the identification and treatment of chronic gastritis and H. pylori positivity during preoperative endoscopic assessment are crucial for effective postoperative symptom management.

In our study, the rate of H. pylori positivity was significantly higher among patients presenting with dyspeptic complaints (p = 0.018). Specifically, H. pylori infection was detected in 69.2% of patients with dyspepsia, whereas this rate was lower in patients presenting with other complaints (Table 3). This finding indicates that H. pylori infection is a common cause of dyspeptic symptoms (8). Dyspepsia can arise due to inflammation of the gastric mucosa and disturbances in gastric motility, processes that may be triggered by H. pylori infection. Therefore, identifying H. pylori positivity in patients with dyspepsia during preoperative endoscopic evaluation is important for preventing postoperative symptoms.

A significant association was observed between age and the severity of inflammation (p = 0.045). In particular, patients aged 51 years and older had a higher proportion of severe inflammation (18.2%) compared to other age groups (Table 5). This finding suggests that advancing age may contribute to more pronounced inflammatory processes in the gastric mucosa. Previous studies have reported that the regenerative capacity of the gastric mucosa decreases with age, and chronic inflammation becomes more common in elderly patients, supporting our observation (9). Therefore, during preoperative endoscopic evaluation, careful assessment of inflammation severity in older patients is of critical importance.

No statistically significant difference was found between genders regarding the distribution of presenting symptoms (p = 0.876). Dyspepsia was the most frequently observed symptom in both males (42.9%) and females (57.1%) (Table 7). This finding suggests that dyspeptic symptoms are similarly distributed between genders. However, some studies in the literature have reported a higher prevalence of dyspepsia among females (10). This discrepancy may be attributable to characteristics of the study population and the sample size.

In our study, the rate of H. pylori positivity was significantly higher among patients who smoked (p = 0.023). Specifically, H. pylori infection was detected in 61.5% of smokers, compared to 33.3% of non-smokers (Table 3). This finding suggests that smoking increases the risk of H. pylori infection, which is consistent with previous literature (11). Smoking may enhance inflammation in the gastric mucosa, facilitating colonization by H. pylori. Therefore, identifying H. pylori positivity in smokers during preoperative endoscopic evaluation is important for preventing postoperative symptoms.

In our study, the severity of inflammation was found to be significantly higher in patients with dyspeptic complaints (p = 0.026). Severe inflammation was observed in 21.4% of patients presenting with dyspepsia, whereas this rate was lower in patients presenting with other complaints (Table 4). This finding suggests that dyspeptic symptoms may be associated with pronounced inflammatory processes in the gastric mucosa. Increased inflammation can lead to mucosal damage and motility disturbances, contributing to the persistence of dyspeptic symptoms (9). Moreover, the significant association observed between H. pylori positivity and dyspepsia (p = 0.018) indicates that this bacterium may trigger inflammation and related symptoms (8). Therefore, assessing the severity of inflammation during preoperative endoscopic evaluation is important for managing postoperative symptoms effectively.

CONCLUSION

The findings of this study indicate that preoperative endoscopic examinations can play a critical role in identifying pathological findings such as H. pylori positivity, chronic gastritis, and the severity of inflammation. The observation that inflammation severity was higher in H. pylori positive patients and that dyspeptic complaints were more common among those infected suggests that these factors may contribute significantly to the persistence of postoperative symptoms. Therefore, preoperative endoscopic assessment is recommended for patients scheduled for cholecystectomy, especially those

with severe dyspeptic symptoms. Additionally, eradication therapy should be considered in patients with confirmed H. pylori infection to help prevent postoperative symptoms. A key limitation of this study is the lack of postoperative symptom follow-up.

DESCRIPTIONS

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