

## A Prospective Study of Preoperative Endoscopy of Upper GI Tract in Planned Cholecystectomy Patients in Tertiary Care Hospital

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### Abstract

**Background:** To study upper GI tract endoscopy before surgery in people who are having cholecystectomy. To do upper GI endoscopy in patients planned for laparoscopic cholecystectomy. To assess preoperative and delayed postoperative pain in patients using VAS score. To correlate above findings with pre-operative pain which is assessed using VAS score. **Material and Methods:** A prospective study designed used with 66 patients, the study includes the Patients with cholelithiasis admitted for elective laparoscopic cholecystectomy in wards of Department of General Surgery, Government Medical College, Nalgonda, Telangana, India, during the study period 2019 to 2021. **Results:** Patients presenting with typical biliary colic also showed a lower proportion of positive UGIE findings, which indicates upper GI diseases to be ruled out before undergoing surgery as cholelithiasis is an incidental finding in most of the cases. **Conclusion:** Cholelithiasis and other diseases of the upper GI tract have similar clinical presentations. Even after surgery, upper gastrointestinal symptoms persist in a large number of cholelithiasis patients, which may necessitate further research. While UGIE is not advised for all cholelithiasis patients, it can be helpful in some cases of atypically presenting cholelithiasis patients to avoid atypical symptoms after surgery. **Keywords:** cholelithiasis, GI diseases, biliary colic, UGIE, VAS score.

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### Introduction

Cholelithiasis is a typical gastrointestinal condition that a surgeon typically encounters on a daily basis in practice. Cholelithiasis is usually detected by ultrasound for upper gastrointestinal symptoms or during routine checkups for the treatment of other diseases.<sup>[1,2]</sup>

Except for high-risk patients who are unfit for surgery, where conservative medical management is advised, surgery is the preferred course of treatment. Symptomatic cholelithiasis usually present with epigastric pain especially with a fatty meal occurred after 1-2 hrs of the meal and lasted about a few hours. It may be associated with nausea and vomiting.<sup>[3,4]</sup>

But some gallstone patients present with a complex combination of clinical symptoms which resembles like symptomatic cholelithiasis which may be due to the primary cause or secondary to other associated gastrointestinal problems like peptic ulcer diseases, esophagitis, GERD etc, symptomatic cholelithiasis presenting with the symptoms similar to other GI tract diseases is a great challenge to the treating surgeon as patients may present with similar pain/complaints even after the cholecystectomy (postoperative cholecystectomy syndrome). So proper evaluation of the gallstone disease associated with the other problems of GI diseases is the utmost important task before any elective cholecystectomy.<sup>[5,6]</sup>

Patients having gallstone disease diagnosed by USG as cholelithiasis may present either typical pain or atypical pain or both. Patients with atypical GI symptoms may be one of the

causes of post cholecystectomy syndrome. It is important to consider as a routine procedure to find out any other associated GI disorders in cholelithiasis patients who were diagnosed by USG and planned for surgery.<sup>[7]</sup>

UGIE is one of the important investigation tools to find out any upper GI diseases which may find an associated problem in a cholelithiasis patient and can be conservatively managed preoperatively which affects the postoperative status.<sup>[8]</sup>

### **Methodology**

The study includes the patients admitted in the surgical wards of Government Medical College, Nalgonda, Telangana, India, from 2019 to 2021 for treatment of cholelithiasis.

**Study Design:** A prospective study

Place - Government Medical College, Nalgonda, Telangana, India.

**Study Period:** 18 months

### **Source of Data:**

Patients with cholelithiasis admitted for elective laparoscopic cholecystectomy in wards of Department of General Surgery, Government Medical College, Nalgonda, Telangana, India during the study period.

**Sample Size:** 66

### **Selection Criteria**

#### **Inclusion Criteria**

- USG proven cholelithiasis patients who are willing to participate in the study.
- Cholelithiasis patients with upper GI symptoms.

#### **Exclusion Criteria:**

- Acute cholecystitis with cholelithiasis
- Patients who are unfit or unwilling for surgery
- Patients with previous upper GI surgeries
- Patients not willing to participate
- Patients with obstructive jaundice, gallstone pancreatitis, GB neoplasm

### **Materials and Methods:**

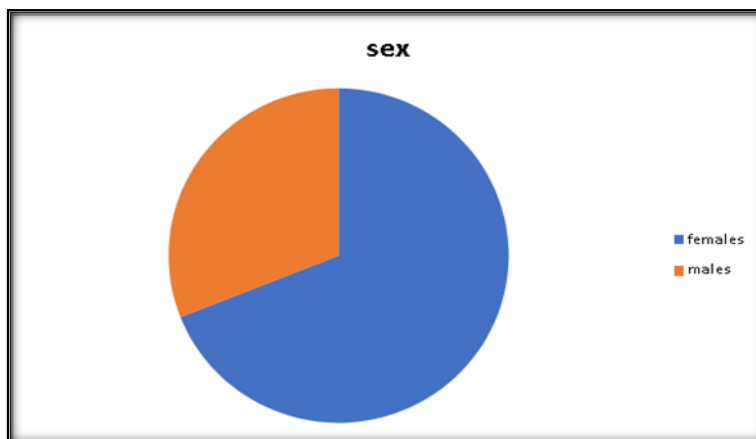
Patients will be subjected to obtaining demographic data and detailed history to determine the etiology and associated symptoms. general examination, ultrasound examination and upper gastrointestinal endoscopy. VAS score assessment of the patient preoperatively and postoperatively in patients done.

## **RESULTS**

Prior to cholecystectomy, upper GI endoscopy was performed on all patients admitted with cholelithiasis, and the results were recorded. Patients were divided into two groups based on the UGIE:

In group A: Patients with symptomatic cholelithiasis and normal UGIE results were included.

In group B: Patients with UGIE who have symptomatic cholelithiasis and some pathological findings were included.



**Graph 1: pie diagram of sex distribution**

66 patients with a mean age of 43.6+/- 13.8 years were included in this study. Women made up the majority of patients (n=46,69%), followed by men (n=20, 31%).

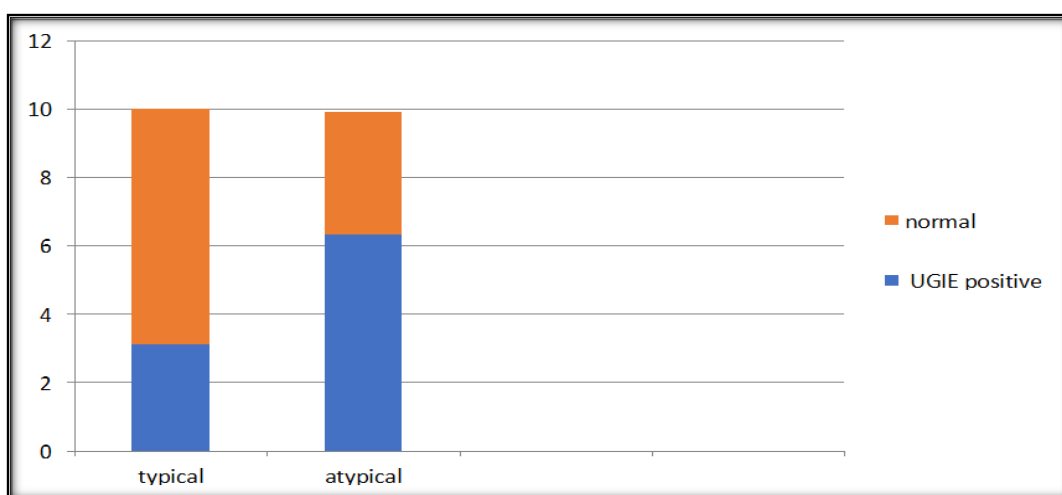
54 percent of the study participants had atypical biliary colic symptoms, while the remaining participants had typical biliary colic symptoms (n = 34).

65% of patients who underwent UGIE for biliary colic symptoms had normal endoscopy findings, compared to 35% of patients who had positive endoscopy findings.

Atypical biliary colic was present in a significantly higher percentage of patients with positive UGIE findings than was biliary colic in patients with positive findings (31%, n=7) (63%, n=28). Patients presented with typical biliary colic had higher proportion of UGIE normal findings (69%) when compared to patient with atypical biliary colic (36%).

**Table 1: UGIE findings comparison.**

Biliary colic symptoms	UGIE findings (normal)	UGIE findings (positive)	Total
Typical biliary colic	14(69%)	7(31%)	22
Atypical biliary colic	16(36%)	28(63%)	44
Total	30(45%)	36 (54%)	66

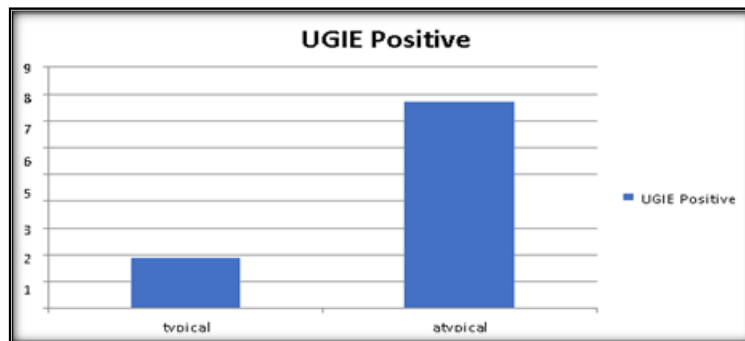


**Graph 2: Bar diagram of UGIE Findings in typical and atypical pain**

The above bar diagram shows that the patients presented with typical biliary colic symptoms had more proportion of normal UGIE findings than positive UGIE findings. whereas, the

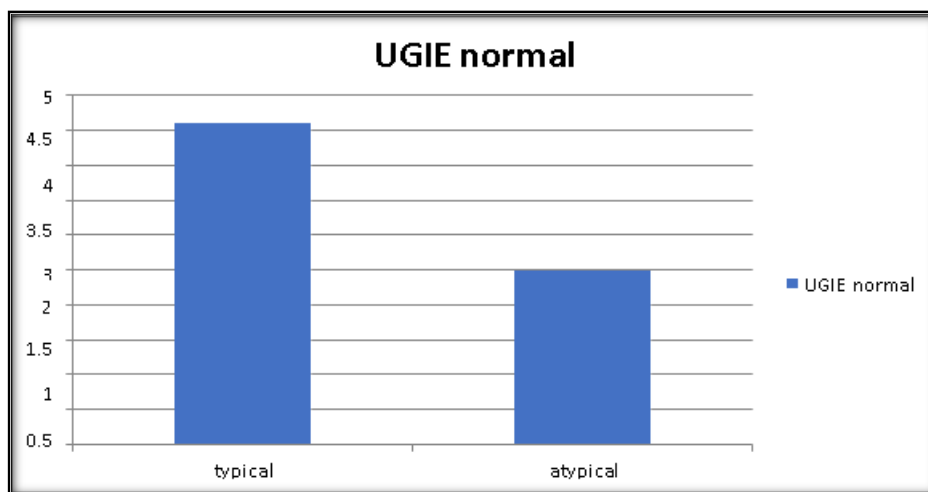
patients presenting with atypical biliary colic symptoms had higher proportion of positive UGIE finding than normal UGIE findings.

- Among 36 patients who were positive for upper GI lesions 7 (19%) of them had typical and 28(77%) have atypical biliary colic symptoms.



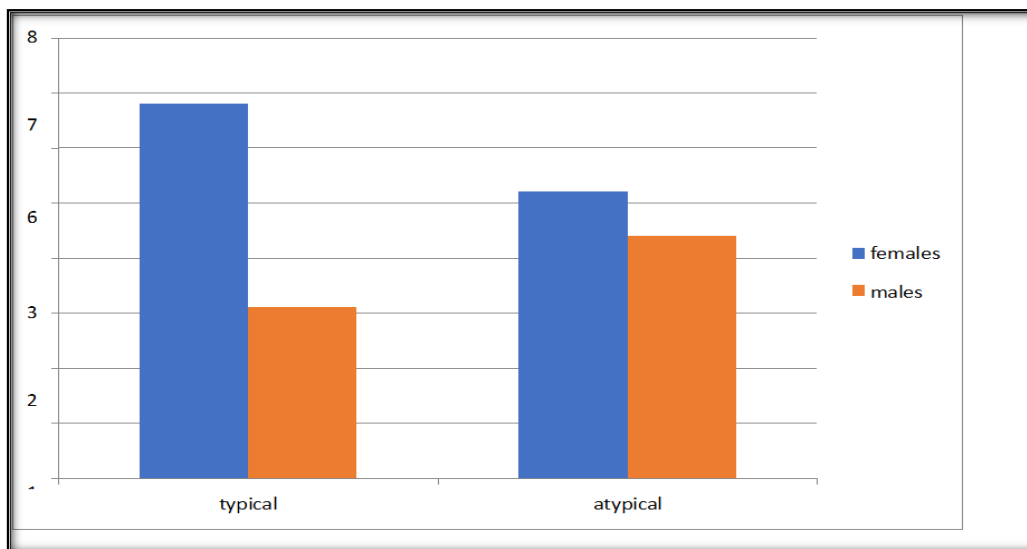
**Graph 3: Bardigram of UGIE positive findings**

- The above bar diagram shows that higher proportion of positive UGIE findings were found in patients presenting with atypical biliary colic symptoms.
- Comparatively, out of 30 patients with normal UGIE results, 14 (46%) had typical biliary colic and 16 (53%) had atypical biliary colic.



**Graph 4: Bardigram of UGIE normal findings**

- The above bar diagram shows that higher proportion of normal UGIE findings were found in patients presented with typical biliary colic.
- The majority of patients were found to be normal, while the remainder tested positive for lesions that the UGIE detected. The most common condition among them was gastritis (18%), which was followed by duodenal ulcer (10%) and reflux oesophagitis (5%).
- Among 66 patients, 68% (22) of the females and 31% (10) of the males had typical biliary symptoms, while 52% (24) of the females and 30% (10) of the males had atypical symptoms.



**Graph 5: Bar diagram of sex ratio in typical and atypical pain**

**Table 2-Maleandfemaledistribution**

	Typical biliary colic	atypical biliarycolic	total
male	10(50%)	10(50%)	20
female	22(47%)	24(52%)	46
total	32(48%)	34(51%)	66

- Patients were divided into 2 groups based on UGIE findings. Group A includes patients with normal UGIE findings 32 (48%)
- Group B includes patients with positive UGIE findings 34(52%)
- VAS were noted preoperatively and postoperatively in 1st week, 4th week and 6th week.

**Table 3: Comparison of patients in groups A and B's preoperative and postoperative VA scores**

VAS score	preoperative pain score		1 <sup>st</sup> week of post op		4 <sup>th</sup> week of postop		6 <sup>th</sup> week of post op	
	A(32)	B(34)	A(32)	B(34)	A(32)	B(34)	A(32)	B(34)
0	1(3%)	1(2%)	17(53%)	8(23%)	28(87%)	16(47%)	31(96%)	24(70%)
1	21(65%)	11(32%)	15(46%)	18(52%)	5(15%)	14(41%)	1(3%)	8(23%)
2	11(34%)	17(50%)	1(3%)	11(32%)	0	4(11%)	0	1(2%)
3	1(3%)	6(17%)	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0

Preoperative pain of VAS 0 is present in significantly lower proportion of patients in both group A and group B. VAS 1 is present in 65%(n=21) in group A and 32% (n=11) in group B patients. VAS 2 present in 34%(11) patients of group A and 50%(17) patients of group B. VAS 3 present in 3%(1) patients of group A and 17%(6) patients of group B inferring preoperative pain is higher in group B patients.

In the first week following surgery, 23% of group B patients and 53% of group A patients had VAS 0 scores. Patients in groups A and B (46% and 52%, respectively) had VAS 1

present. Indicating that postoperative pain is worse in group B when compared to group A, VAS 2 is present in 3% of group A and 32% of group B.

Proton pump inhibitors were used symptomatically to treat postoperative pain in group B. In the fourth postoperative week, VAS was 0 in 87% of group A patients and 47% of group B patients. 15% of group A patients and 41% of group B patients had a VAS 1. 11% of group B patients had a VAS 2.

In 6th week of postoperative period, VAS 0 seen in 96% of group A and 70% of group B patients. VAS 1 seen in 3% of group A and 23% of group B. VAS 2 seen in 2% of group B patients inferring that postoperative pain is higher in patients of group B (patients with positive UGIE findings) and in decreasing trend after the use of medical treatment.

The patients included in group A usually had lesser proportion of postoperative pain without the use of any other medical treatment, indicating that no post cholecystectomy symptoms present in patients of normal UGIE findings after undergoing cholecystectomy. The patients included in group B had been treated medically in the postoperative period which showed decrease in the symptoms which approximately took 2 weeks of medical treatment, indicating the presence of post cholecystectomy symptoms in patients of positive UGIE findings.

**Table 4: Comparative analysis of pain score in group A and group B patients inpre-op and postoperative period**

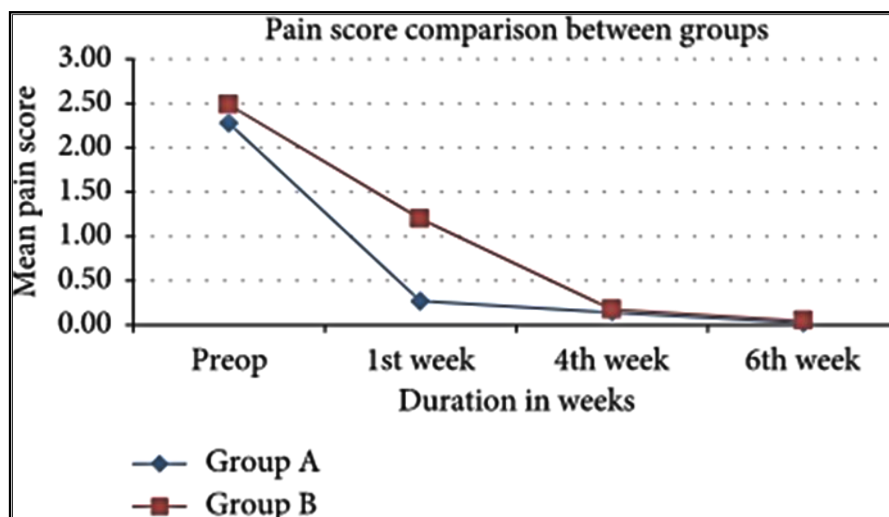
variables	Pre op		1 <sup>st</sup> week		4 <sup>th</sup> week		6 <sup>th</sup> week	
	A	B	A	B	A	B	A	B
mean	1.393	1.885	0.51	1.085	0.15	0.685	0.03	0.457
median	1	2	0	1	0	1	0	0
SD	0.656	0.718	0.686	0.742	0.364	0.709	0.174	0.700
IQR	1	1	1	1	1	1	1	1
P value	0.0012		0.0006		0.0001		0.0004	

The average mean of preoperative pain score in group A is 1.393 and group B is 1.885. The median of preoperative pain score in group A is 1 and group B is 2. The standard deviation of preoperative pain score in group A is 0.656 and group B is 0.718. The p value of preoperative pain score of group A and B is 0.0012, which is significant.

The average mean of 1st week of postoperative pain score of group A is 0.51 and group B is 1.085. The average median of 1st week of postoperative pain score of group A is 0 and group B is 1. The standard deviation of 1st week of postoperative pain of group A is 0.686 and group B is 0.742. The p value of 1st week postoperative pain score of group A and B is 0.0006, is significant.

The average mean of 4th week postoperative pain score in group A is 0.15 and group B is 0.685. The average median of 4th week postoperative pain score in group A is 0 and group B is 1. The standard deviation of 4th week postoperative pain score in group A is 0.364 and group B is 0.709. The p value of 4th week postoperative pain score of group A and B is 0.0001, is significant.

The average of mean of 6th week postoperative pain score of group A is 0.03 and group B is 0.457. The average median of 6thweek postoperative pain score in group A and B is 0. The standard deviation of 6th week postoperative pain score in group A is 0.174 and group B is 0.700. The p value of 6th week postoperative pain score of group A and B is 0.0004, is significant.



**Graph 6: Graph of pain comparison**

The graph above shows that the pain score in groups A and B decreases gradually by the sixth week. When compared to group B, group A's pain score was lower.

My research has shown that patients with other upper GI disorders frequently exhibit atypical biliary colic, which is identified by UGIE. In these patients, there is higher proportion of post cholecystectomy symptoms which needed medical treatment.

However, patients presenting with typical biliary colic also showed a lower proportion of positive UGIE findings, which indicates upper GI diseases to be ruled out before undergoing surgery as cholelithiasis is an incidental finding in most of the cases

## DISCUSSION

Cholelithiasis is mostly an incidental finding in patients presenting with biliary colic. Thorough investigations to be done to prevent post-operative complications. UGIE is better option to be involved as routine preoperative investigation in patients undergoing cholecystectomy to prevent post cholecystectomy symptoms.<sup>[9-11]</sup>

The study includes a total of 66 patients with mean age of 43.6+/-13.8 yrs. Majority of them were women ,46(69%) and men 20(31%)

The majority of the patients (69%) were female, and 34 (54% of them) had symptoms that were unusual for biliary colic. 65% of patients who underwent UGIE for biliary colic symptoms had normal endoscopy findings, compared to 35% of patients who had positive endoscopy findings. When compared to patients with typical biliary colic who also had positive UGE results (31%, n=7), a significantly higher percentage of patients (63%, n=28) had atypical biliary findings. The most frequent upper GI issues seen in patients with UGIE detected lesions were gastritis (18%), duodenal ulcer (10%), and reflux esophagitis (5%)

Seven (19%) of the 36 patients with upper GI lesions who tested positive had typical symptoms of biliary colic, while 28 (77%) had atypical symptoms. Comparatively, 14 (46%) of the 30 patients with normal UGIE had typical biliary colic, while 16 (53%) had atypical biliary colic. Among 66 patients, typical biliary symptoms were seen in 68% (22) females and 31%(10) males and atypical symptoms seen in 52% (24) females and 30%(10) males.

The pre-op patients in both groups A and B separately had their pain scores statistically analyzed because it was the primary symptom in both groups. In group B, the pre-op pain score was comparatively high (p value 0.05). A pain score of three was present in 17% of group B and 3% of group A. It indicates that pain levels were higher in UGIE positive finding patients than UGIE normal patients.<sup>[12-15]</sup>

The pain score was significantly higher in group B patients during the first week following surgery (p value 0.05). 32% of patients in group B had a pain score of 2, compared to 0% of patients in group A. 1 was the pain score in group B (52%), compared to group A (46%).

In the fourth postoperative week, 87% of group A patients and 47% of group B patients had pain scores of 0. 52% of group A and 15% of group b reported having a pain score of 1. While 0% of group A had a pain score of 2, 11% of group B did.

In 6th postoperative week, pain score 2 seen in 2% of group B, pain score 2 seen in 23% of group B and 3% of group A. whereas pain score 0 seen in 70% of group B and 96% of group A.

There is significant difference of pain score between group A&B during preoperative period, 1st ,4th ,6th postoperative week, indicating that patients with positive UGIE findings have post cholecystectomy symptoms.

Only a small difference in pain score existed between groups A and B in the fourth and sixth weeks. It indicates that pain reduction in group B significantly increased ( $p=0.0001$  &  $p=0.0004$ ) in response to medical management in the fourth and sixth weeks. The maximum amount of pain reduction, comparable to group A-UGIE normal patients, was achieved by treating group B patients in accordance with their UGIE findings for 4 to 6 weeks.

90% of all postoperative patients in this study achieved complete pain relief after 6 weeks. At the conclusion of three months, the overall response rate was 95%.

It demonstrated how well group B's concurrent medical care controlled the side effects of their cholecystectomy.<sup>[16-18]</sup>

The waiting list, patient discomfort, and endoscopy-related complications are the main challenges with routine UGIE for all patients. The benefit of this study is that by performing routine UGIE, we can rule out malignancy in all patients as well as other upper GI diseases. Additionally, it can stop group B patients from needing an expensive emergency UGIE that requires hospitalization.

Additionally, patients with cholecystitis, empyema gallbladders, and gallstone pancreatitis were not included in our study. As a result, patients who had gallstones and confirmed gallbladder pathology underwent surgery without first undergoing an upper gastrointestinal endoscopy.

We cannot completely advise UGI scopy for all cholelithiasis patients with symptoms because one-fourth of the patients in our study had normal endoscopy results. To avoid persistent pain even after surgery, we might advise UGIE for patients with an atypical presentation in order to rule out other causes of pain. In order to avoid performing prophylactic cholecystectomy on asymptomatic cholelithiasis patients, it is also crucial to carefully assess every cholelithiasis patient's preoperative period.

## CONCLUSION

Cholelithiasis and other diseases of the upper GI tract have similar clinical presentations. It can be challenging to tell whether upper GI symptoms are brought on by cholelithiasis or another upper GI condition. Even after surgery, upper gastrointestinal symptoms persist in a large number of cholelithiasis patients, which may necessitate further research. It is advantageous to perform UGIE in some cholelithiasis patients with atypical presentations even though it is not advised for all patients with cholelithiasis to avoid atypical symptoms after surgery.

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**Conflict of interest:** None.

## REFERENCES



1. Khedkar, I., Prasad, D., and Datta, A. "Diagnostic value of upper gastrointestinal endoscopy prior to elective laparoscopic cholecystectomy for symptomatic cholelithiasis," *International M. Acalovschi, D. Dumitrascu, I. Caluser, and A. Ban, "Comparative prevalence of gallstone disease at 100-year interval in a large Romanian town," Digestive Diseases and Sciences, 1987, vol. 32, pp. 354–357.*
2. Kunnuru, S. K. R., Kanmaniyan, B., Thiagarajan, M., Singh, B. K., & Navrathan, N. (2021). A Study on Efficacy of UGI Scopy in Cholelithiasis Patients before Laparoscopic Cholecystectomy. *Minimally Invasive Surgery, 2021.*
3. Pham, T.H., Hunter, J.G., Gallbladder and the Extrahepatic Biliary System, in *Schwartz's Principles of Surgery, 10th ed., F.C. Brunicaudi, et al., Editors. 2014, McGraw-Hill Education: New York, NY.mm*
4. Al-Azawi, D., Rayis, A., Hehir, D. J. "Esophagogastroduodenoscopy prior to laparoscopic cholecystectomy," *Journal of Laparoendoscopic & Advanced Surgical Techniques, 2006, vol. 16, no. 6, pp. 593–597.*
5. 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," *Scandinavian Journal of Gastroenterology, vol. 30, no. 5, pp. 411-412, 1995.*
6. Girometti, R., Brondani, G., Cereser, L. et al., "Post-cholecystectomy syndrome: spectrum of biliary findings at magnetic resonance cholangiopancreatography," *British Journal of Radiology, 2010, vol. 83, no. 988, pp. 351–361..*
7. Schirmer, B. D., Winters, K. L., Edlich, R. F. "Cholelithiasis and cholecystitis," *Journal of Long-Term Effects of Medical Implants, 2005, vol. 15, no. 3, pp. 329–338.*
8. Kim, S.B., Kim, K.H., Kim, T.N. et al., "Sex differences in prevalence and risk factors of asymptomatic cholelithiasis in Korean health screening examinee: a retrospective analysis of a multicenter study," *Medicine (Baltimore), 2017, vol. 96, no. 13, p. e6477.*
9. McSherry, C.K. Cholecystectomy-the gold standard. *Am J Surg. 1989; 158: 174-8.*
10. Thybusch, A., Schaube, H., Schweizer, E., Gollnick, D., Grimm H. Significant value and therapeutic implications of routine gastroscopy before cholecystectomy. *J Chir. 1996; 13(4): 171-4.*
11. Yavorski, C.C., Acosta, J.A., Ragland, J.J. Precholecystectomy esophagogastroduodenoscopy: is it of value? *Am Surg. 1995; 61(12): 1032-4.*
12. Sosada, K., Zurawinski W., Piecuch, J., Stepien, T., Makarska J. Gastroduodenoscopy: a routine examination of 2,800 patients before laparoscopic cholecystectomy. *Surg Endosc. 2005; 19(8): 1103-8.*
13. Beyermann, K., Stinner, B., Hasselmann, U., Rothmund, M. Consequences of routine gastroscopy before cholecystectomy. *Langenbecks Arch Chir. 1992; 377(5): 314-6.*
14. Rashid, F., Rashid, N., Waraich, N., Ahmed, J., Iftikhar, S.Y. Role of routine esophagogastroduodenoscopy before cholecystectomy. *Int J Surg. 2010; 8(3): 236-8.*
15. Mozafar, M., Reza Sobhiyeh M., Heibatollahi M. Is esophagogastroduodenoscopy essential prior to the elective surgical therapy of symptomatic cholelithiasis? *Gastroenterology and Hepatol. 2010; 3(2).*
16. Karmacharya, A., Malla, B.R., Joshi, H.N., Gurung, R.B., 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): 300-4.*
17. Gupta P., Gupta V., Singh, S.P., Singh, S. P., Mishra, S.P., 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.*
18. Anandaravi, B.N., Deepak, H.L. Role of Upper GI Scopy in Preventing Post-cholecystectomy Pain in Patients with Cholelithiasis. *Int J Sci Res. 2016; 8(5): 876-7*