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## Oesophago-gastroduodenoscopy evaluation prior to elective cholecystectomy: A necessity?

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### Abstract

**Introduction:** A proportion of patients do not get symptomatic relief after cholecystectomy for gallstone disease. The ultrasound finding of gallstones may be incidental and peptic ulcer disease of the stomach or the duodenum, gastro-oesophageal reflux or hiatus hernia may be the true cause of pain. Symptomatology of upper GI diseases can be overlapping. Upper abdominal pain may be secondary to either cholelithiasis or gastroduodenal diseases. Differentiating between these two situations is important, because the prevalence of both conditions is common in the general population. Thus, this study tries to seek the importance of upper gastrointestinal endoscopy to reveal the association between gastrointestinal symptoms and diseases with gallstones.

**Aims and Objectives:** To assess the value of preoperative upper GI endoscopy for qualifying patients with gallstone disease undergoing elective cholecystectomy, by determining upper GI lesions.

**Materials and Methods:** This is an observational study conducted on 50 cases of ultrasound proven gallstone disease. After the initial examination, all the patients were subjected to Upper GI endoscopy, and biopsy samples were obtained for histopathology wherever indicated.

**Conclusion:** Routine pre-operative upper GI endoscopy will help to detect the upper GI lesions which may be the true cause of symptoms, or they both (Gallstones and Upper GI lesions) may co-exist concomitantly, as is evidenced by our study wherein the upper GI lesions were detected in 62% (n=31) of the study sample, which otherwise undetected will lead to persistence of symptoms, even after cholecystectomy.

**Keywords:** Cholelithiasis, endoscopy, cholecystectomy, gastritis, biliary colic, peptic ulcer

### Introduction

Gallstone disease is one of the most common problems affecting the digestive tract.

The prevalence of gallstones is related to many factors, including age, gender, and ethnic background. Gallbladder stones are more common in western parts of the world; however, it is commonly seen among North American Indians and Hispanics and less in Asian and African populations. In India, it is approximately 4%, whereas it is 10% in the Western world<sup>[1]</sup>.

The pathogenesis of gallstones is known to be multifactorial, with the key factors including, Cholesterol supersaturated bile, Nucleation and growth of cholesterol monohydrate crystals and altered biliary motility. Predisposing conditions include Obesity, pregnancy, dietary factors, Crohn's disease, terminal ileal resection, gastric surgery, hereditary spherocytosis, sickle cell disease, and thalassemia are all associated with an increased risk of developing gallstones. Similarly, resection of ileum, abnormal emptying of the gall bladder may aid the formation of gall stones. Hence, removing gall stones without removing gall bladder inevitably leads to gall stone recurrence<sup>[1]</sup>. Women are three folds more likely to develop gallstones than men, and first-degree relatives of patients with gallstones have a twofold greater prevalence<sup>[1]</sup>. Gallstones are frequently discovered by accident on ultrasonography, computed tomography scans, abdominal radiography, or laparotomy in individuals who have no biliary symptoms. Every year, around 3% of those who are asymptomatic become symptomatic. Over the course of a 20 years span, nearly two-thirds of asymptomatic gallstone patients stay symptom-free<sup>[2]</sup>.

Symptomatic cholelithiasis patients usually present with right upper quadrant or epigastric pain which maybe colicky. Other symptoms include dyspepsia, flatulence, food intolerance, especially to fats and some alteration in bowel frequency<sup>[1]</sup>.

Pain, gallstone colic or the BILIARY COLIC is constant and increases in severity over the first half hour or so and typically lasts 1 to 5 hours. It is located in the epigastrium or right upper quadrant and frequently radiates to the right upper back or between the scapulae. Attacks frequently occur postprandially or awaken the patient from sleep. Once a patient begins to experience symptoms, there is a greater than 80% chance that he or she will continue to have symptoms in the future or develop a complication. These complications may result from obstruction of the gallbladder outlet, causing acute cholecystitis, or migration of a stone into the common bile duct, causing cholangitis or pancreatitis [2, 3].

Atypical presentation of gallstone disease is common. Association with meals is present in only about 50% of patients. Some patients report milder attacks of pain, but relate it to meals. The pain may be located primarily in the back or the left upper or lower right quadrant. Bloating and belching may be present and associated with the attacks of pain. In patients with atypical presentation, other conditions with upper abdominal pain should be sought out, even in the presence of gallstones. These include peptic ulcer disease, gastroesophageal reflux disease, abdominal wall hernias, irritable bowel disease, diverticular disease, liver diseases, renal calculi, pleuritic pain, and myocardial pain. When the pain lasts >24 hours, an impacted stone in the cystic duct or acute cholecystitis should be suspected [2, 3].

One of the most common surgeries performed in any General Surgery unit is that of laparoscopic or open cholecystectomy. The diagnosis of symptomatic gallstones or chronic calculous cholecystitis depends on the presence of typical symptoms and the demonstration of stones on diagnostic imaging. An abdominal ultrasound is the standard diagnostic test for gallstones [4].

The ultrasound finding of gallstones may be incidental and peptic ulcer disease of the stomach or the duodenum, gastroesophageal reflux or hiatus hernia may be the true cause of pain. Symptomatology of upper GI diseases can be overlapping. Upper abdominal pain may be secondary to either cholelithiasis or gastroduodenal diseases. A proportion of patients experience similar pain after cholecystectomy. The cause of this pain may be peptic ulcer disease, hiatus hernia or other causes. These patients should first have been investigated to rule out gastroduodenal pathology before undergoing operation to remove gallstones. This approach will not only decrease persistence of symptoms but can also be helpful in detecting gastroduodenal pathologies at an early stage [1].

Persistent post cholecystectomy pain has been reported in 20-30% of patients. The presence of such persistent pain is also called "post cholecystectomy syndrome." The relationship between such persistent pain and cholelithiasis is often unclear. Coexistence of concurrent upper gastrointestinal problems with gallstones may have attributed to the post cholecystectomy syndrome. There is always an immense challenge in the evaluation of patients with upper gastrointestinal symptoms, who have gallstones to decide whether the stones in gallbladder are the source of the symptoms or an incidental finding. Differentiating between these two situations -is important, because the prevalence of both conditions is common in the general population.

This study is conducted to evaluate the efficacy of upper GI endoscopy as an investigative modality in diagnosing other associated upper GI pathologies in patients with USG proven gallstones.

## Methods

An observational study was undertaken over a span of 2 years, at D Y Patil Hospital, Navi Mumbai. All the patients who presented to the Department of General Surgery, on an in-patient and out-patient basis with complaints of upper GI symptoms like abdominal discomfort, dyspepsia, nausea, belching, heart burn, food intolerance, flatulence, vomiting and loss of appetite were subjected to undergo USG abdomen and pelvis.

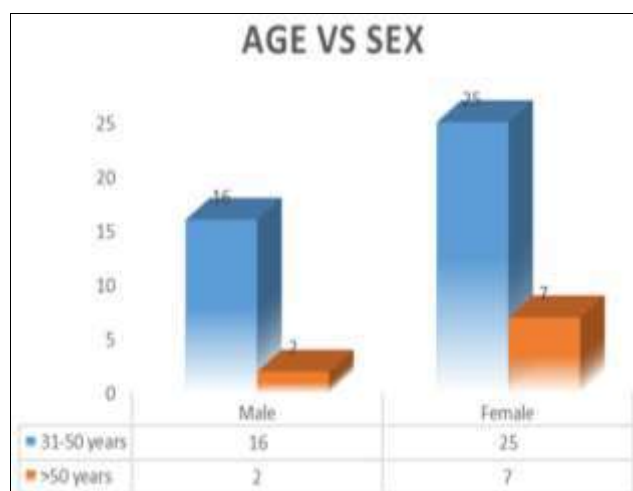
A total of 50 patients with positive USG findings for cholelithiasis were included and further evaluated by upper GI endoscopy. Patients with complicated gallstone disease, choledocholithiasis, obstructive jaundice, cholangitis, gallstone pancreatitis, cholecystoenteric fistula, gall bladder neoplasm, previous biliary/pancreatic surgery and previous gastric surgery were excluded out of the study.

The personal information and detailed description of the symptoms at the time of presentation were documented. The clinical examination findings, the ultrasonographic findings and the endoscopic findings were tabulated and analyzed.

Statistical analysis was done using MS Excel and SPSS v26 software. Necessary diagrams were constructed to represent the data.

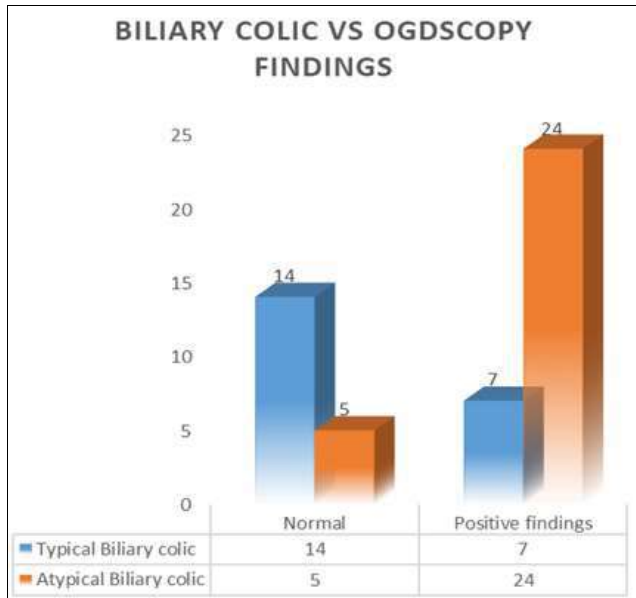
## Results

Out of 50 subjects evaluated during the study period, 32 were females and 18 were males. The most common age group affected was between 31-50 years (82%), followed by more than 50 years being 18%. In all the age groups, females were affected more than males except in individuals more than 50. Below is the bar diagram depicting the age and sex distribution of the current study. It clearly shows a female preponderance (64%) among the patients admitted for cholelithiasis. It should also be noted the higher rate of incidence (82%) in the age group of 31-50 years.



**Fig 1:** Age vs Sex distribution (The chi square statistic is 0.94 and p value 0.342.  $p > 0.05^*$ )

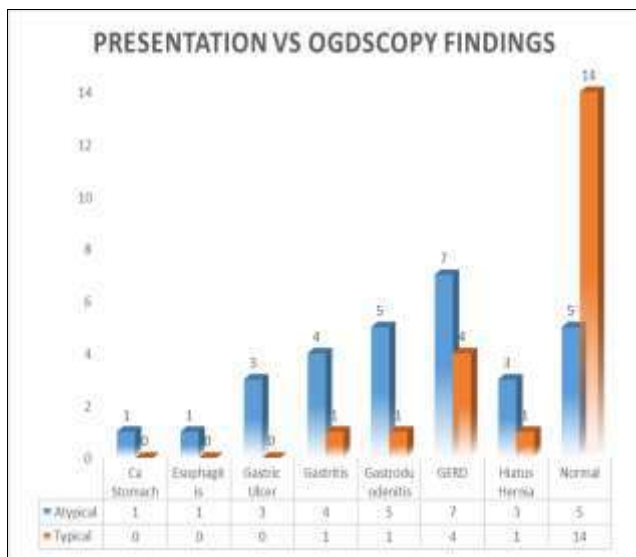
In this study the patients were grouped as atypical and typical biliary colic presentation. Out of 50 patients 21 patients presented with typical biliary colic and 29 patients presented atypically with gallstone disease suggesting that the upper Gastrointestinal symptoms of the patients were due to other pathologies and not due to gallstone disease alone which could probably be just an incidental sonographic finding.



**Fig 2:** Biliary colic vs OGD-scopy findings

All the 50 patients who had sonographic evidence of gallstones were subjected to UGI endoscopy after due consent. Out of the 50 patients who underwent UGI endoscopy, 38% of the cases were found to have normal mucosal study. Remaining 62% of the subjects had positive endoscopic findings. (Figure 2)

Out of 21 patients presented with typical biliary colic, 14 (66.7%) had normal OGDscopy findings and 7 (33.3%) had some UGI pathologies. And among 29 patients with atypical biliary colic 24 (82.8%) had UGI pathologies and 5 (17.2%) had normal findings.



**Fig 3:** Distribution of UGI pathologies on OGDscopy (The chi square statistic is 14.643 and p value 0.041).  $p < 0.05^*$

Figure 3 was constructed to study the frequencies of the different pathologies detected in endoscopy among the patients. The most common endoscopic finding was found to be Gastroesophageal reflux disease (GERD) (n=11), followed by Gastroduodenitis (n=6) and Gastritis (n=5). Other endoscopic findings were Hiatus Hernia (n=4), Gastric ulcer (n=3), Carcinoma stomach (n=1) and Oesophagitis (n=1).

**Discussion**

In the present study the age of patients ranged from 31 to 60

years, with majority of the subjects falling in the age group of 30–50 years. The mean age of the patients was found to be 43.3 years. This agrees with the studies conducted by Supreeth Kumar Reddy et al [5], Khedkar et al [6] and Kolla et al [7]. In their study, the mean age affected was 45.3, 39.6 years and 38.6 years respectively.

Out of 50 patients studied, 32 were females and 18 males. This verifies the fact that gall bladder disease is more prevalent in females. The percentage of females being affected was in line when compared to the studies conducted by Supreeth Kumar Reddy et al [5] (females, 69%), Gadahire et al [8] (females, 66.6%) and Sabitha et al [9] (females, 67.5%).

Out of 50 patients, 21 presented with typical biliary colic pain. In the study undertaken by Mozafar et al [10] 50.6% of the subjects experienced typical pattern of gallstone pain. In the study done by Karmacharya et al [11] nausea was the most common symptom followed by biliary colic and heart burn. Khedkar et al observed abdominal pain in all the subjects followed by nausea in 71.25% of the patients [6].

Out of 50 subjects who underwent upper GI endoscopy, 19 had normal mucosal findings. Remaining 31(62%) patients had some positive endoscopic findings. 82% patients among atypical presentation of biliary colic had UGI pathologies whereas 33% patients had pathologies with typical presentation.

In this study, the most common endoscopic finding was found to be Gastro-oesophageal-reflux-disease (GERD) (22%), followed by Gastroduodenitis (12) and Gastritis (10). Other endoscopic findings were Hiatus Hernia (8%), Gastric ulcer (6%), Carcinoma stomach (2%) and Oesophagitis (2%). Anandaravi et al, [4] Gadahire et al [8] and Rams et al [12], found GERD to be the most common upper GI pathology in their study. Kolla et al [7], Karmacharya et al [11], Ibrahim et al [13], Rajkumar et al [14] and Kalpande S. et al [15], found gastritis to be the common associated pathology in their studies whereas Sabitha et al [9], found gastric ulcer to be more commonly present. In this study, out of 21 patients who presented with typical biliary colic, 14 had normal mucosal study, 4 had GERD and one patient each had features of gastritis, gastroduodenitis and Hiatus hernia on endoscopy. We can observe that, most of the patients who presented with typical biliary colic had only cholelithiasis and no other upper GI pathologies. Whereas most of the patients who had other symptoms apart from typical biliary colic had other associated upper GI pathologies (OR – 0.104). Similar findings were noted by Mozafar et al [10], where patients with typical abdominal pain had a very low likelihood to cover other upper GI problems (OR= 0.006) and that atypical abdominal pain were much more likely to have some other GI problems (OR, 4.9/0.005, or 886).7

**Conclusion**

The ease of detecting gallstones by a simple non-invasive ultrasound abdomen has led to an increase in the diagnosis of gallstones, which has an overlapping symptomatology with that of upper gastrointestinal diseases. The ultrasound finding of gallstones may be incidental and the upper GI lesions may be the true cause of abdominal pain or they both (Gallstones and Upper GI lesions) may co-exist concomitantly, as is evidenced by our study wherein the upper GI lesions were detected in 62% (n=31) of the study sample.

Hence treating either of them alone may lead to the persistence of symptoms postoperatively. And thus, we recommend a preoperative Upper GI endoscopy in all those who undergo elective cholecystectomy for gallbladder stone disease. One

must be vigilant with a patient who has been diagnosed with cholelithiasis.

### Conflict of Interest

Not available

### Financial Support

Not available

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