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Role of Upper gastrointestinal endoscopy prior to laparoscopic cholecystectomy

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ABSTRACT
Aim: Role of Upper gastrointestinal endoscopy prior to laparoscopic cholecystectomy.
Methods: A total of 170 patients were included in the study who were divided in to two groups based on symptomatology, first group (N-70) in which patient present with typical symptoms of biliary colic and second group (N-100) in which patients present with atypical symptoms. Patients of gall bladder stones as demonstrated on ultrasound, which are willing to participate in the study.Patients presenting with any one of the following symptoms pain or discomfort in upper abdomen, nausea or vomiting, early satiety, bloating or fullness of abdomen were included in this study.
Results: UGE showed a predominance of positive findings in group II rather than group I, i.e. atypical greater than typical group(p-0.004) Patients with a clear cut history of previous attack of cholecystitis 53 (75.71%) of patients in group I and 40(40%) of patients in group II. UGI endoscopy findings, Out of 70 patients, and 33 (47.14%) patients showed normal findings and 47 (52.86%) patients showed abnormal findings in group I with atypical symptoms and patients were subjected to biopsy in case of ulcer or any abnormal pathology. Most common findings being the gastritis (30%), hiatus hernia (10%), duodenitis (10%), reflux oesophagitis (7.14%), gastric ulcer (1.43%), duodenal ulcer (1.43%), others including gastric polyp and gastric tumors (2.86%), with histopathological finding suggestive of Helicobacter pylori related ulcers in stomach and duodenum, carcinoma stomach. UGI endoscopy findings, Out of 100 patients, 30(30%) patients showed normal findings and 70(70%) patients showed abnormal findings in group II with atypical symptoms subjected to biopsy in case of ulcer or any abnormal pathology. Most common being the gastritis(41%), hiatus hernia (31%), duodenitis (15%), reflux oesophagitis (10%), gastric ulcer (3%), duodenal ulcer (2%), others including candidialoesophagitis and celiac disease (3%), with histopathological finding suggestive of H.pylori related ulcers in stomach and duodenum and celiac disease. The therapeutic approach was changed in a total of 9(5.29%) out of which 4 patients were diagnosed with ulcer and malignancy in pathological reports in group I and 5 who were diagnosed ulcer and celiac disease in group II. Cholecystectomy was performed in 161 (94.71%) patients.
Conclusion: Pre-elective and routine use of UGE before laparoscopic cholecystectomy helps in reducing persistence of symptoms and in treatment management.
Keywords: Cholelithiasis, Endoscopy, Dyspepsia, USG, Cholecystectomy

INTRODUCTION
Upper abdominal symptoms are common in both gallstone disease and inflammatory disorders of gastroduodenum. Al- though there are a lot of geographic variations in gallstone disease, it is in high prevalence rate in developed countries.[1,2] Gallstone disease is one of the

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common biliary pathologies, but majority of the gallstone diseases are asymptomatic. Being the most common surgical problem, cholelithiasis is prevalent in 5-10% of population, especially among older individuals and females.[3]Sudden expansion of the gall bladder caused due to the pain by the obstructing stone is referred to as "Biliary Colic", commonly occurring at right upper quadrant or epigastric region. The gold standard surgery for symptomatic cholelithiasis is laparoscopic cholecystectomy, which can be curative only whose symptoms are due to gallstones but not due to other upper GI pathologies. Nevertheless, unjustifiable cholecystectomies can occur due to high proportion of non-specific abdominal symptoms in the people with known cholelithiasis.[4,5] Post ultrasound examination and detection, the clinician usually focus only at treating the gallstones and further investigations to rule out other pathologies with similar symptoms are seldom considered.[5] It has been documented that nearly all patients with proven gallstones are referred laparoscopic cholecystectomy whereas, 80% of the referred patients present with other abdominal symptoms.[6,7] Inappropriate cholecystectomies in such a group of patients are likely to be associated with poor relief and symptomatic outcomes.[8] Therefore, evaluating patients with upper GI symptoms with gall stones has still remained a challenge because surgeons cannot surely point if stones are the actual source of symptoms or if it is just an incidental finding. Thus, routine upper GI endoscopic (UGE) examination performed prior to surgery allows ruling out the presence of other upper GI complications along with diagnosis stomach cancer at an early stage. Pre-elective UGE also assists in planning treatment modality for patients with recognized cholelithiasis accordingly.

MATERIAL AND METHODS

A prospective observational study was conducted in the Department of Surgery. Institutional approval was taken for the study. The data collected from the patients included personal information, presenting signs and symptoms, investigations including ultrasonography, UGE finding, biopsy reports if present, medications, surgery details, any post-operative complications and findings. A total of 170 patients were included in the study who were divided in to two groups based on symptomatology, first group (N-70) in which patient present with typical symptoms of biliary colic and second group (N-100) in which patients present with atypical symptoms or dyspepsia (abdominal discomfort, nausea, belching, heart burn, food intolerance, flatulence, vomiting, loss of appetite). Patients who lost to follow up or left the hospital against advice were excluded.

All patients were subjected to UGI endoscopy 1 or 2 days prior to operation and the endoscopic findings were divided as normal, inflammatory, hiatus hernia, ulcers and others. Similar categorizations were applied for histopathological findings as well. The patients were followed up postoperatively on 7^{th}, 14^{th}, 30^{th} day, and 6 months to evaluate the presence of any dyspeptic symptoms.Patients of gall bladder stones as demonstrated on ultrasound, which are willing to participate in the study.Patients presenting with any one of the following symptoms pain or discomfort in upper abdomen, nausea or vomiting, early satiety, bloating or fullness of abdomen were included in this study.

Patients with acute cholecystitis or general condition are not stable and patients not willing to participate in study and lost to follow-up were excluded from this study.

RESULTS

This observational study includes a total of 170 patients, age ranges from 25-68 years for both female and male with mean age of 37.41+10.2 years. Youngest patient was 25 years old whereas oldest patient was 68 years for male and youngest patient was 25 years old whereas oldest patient was 67 years for female. In present study 70.59 % (N-120) of them were female and 29.41% (N-50) were males, there was a female preponderance with a male to female

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ratio of 1:33.1 in general. Presence of gallstones was confirmed by ultrasonography and 74.1% (N-160) of the patients had multiple stones.

Table 1: Comparison between groups.

Typical symptoms (group I)		**Atypical symptoms (group II)**
No. of patients	70 (41.18%)	100 (58.82%)
Mean age of presentation (years)	40.12 years	36.77 years
Male/Female ratio	1:33.1	1:11.1
UGI endoscopy positive findings	35(50%)	72(72%) (p-0.003)
History of attack of cholecystitis	53(75.71%)	40(40%)

Table 1 showing the comparison between the two groups which showed that mean age of presentation in group I is 40.12years and in group II is 36.77 years and male to female ratio shows a female preponderance in both groups (group II > group I). UGE showed a predominance of positive findings in group II rather than group I, i.e. atypical greater than typical group(p-0.004) Patients with a clear cut history of previous attack of cholecystitis 53 (75.71%) of patients in group I and 40(40%) of patients in group II.

Table 2 shows UGI endoscopy findings, Out of 70 patients, and 33 (47.14%) patients showed normal findings and 47 (52.86%) patients showed abnormal findings in group I with atypical symptoms and patients were subjected to biopsy in case of ulcer or any abnormal pathology.

Most common findings being the gastritis (30%), hiatus hernia (10%), duodenitis (10%), reflux oesophagitis (7.14%), gastric ulcer (1.43%), duodenal ulcer (1.43%), others including gastric polyp and gastric tumors (2.86%), with histopathological finding suggestive of Helicobacter pylori related ulcers in stomach and duodenum, carcinoma stomach.

Table 2: distribution of endoscopic findings in group with typical symptomatology

Endoscopic Findings	**No.**	**Percentage**	**Histopathological findings**
Normal	33	47.14	-
Gastritis / pan gastritis	21	30	-
Hiatus hernia	7	10	-
Duodenitis	7	10	-
Reflux esophagitis	5	7.14	-
Gastric ulcer	1	1(1.43%)	1(1.43%)
Duodenal ulcer	1	1(1.43%)	1(1.43%)
Others(gastric polyp, gastric tumors)	2	2.86	2(2.86%)

Table 3 shows UGI endoscopy findings, Out of 100 patients, 30(30%) patients showed normal findings and 70(70%) patients showed abnormal findings in group II with atypical

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symptoms subjected to biopsy in case of ulcer or any abnormal pathology. Most common being the gastritis(41%), hiatus hernia (31%), duodenitis (15%), reflux oesophagitis (10%), gastric ulcer (3%), duodenal ulcer (2%), others including candidialoesophagitis and celiac disease (3%), with histopathological finding suggestive of H.pylori related ulcers in stomach and duodenum and celiac disease.

Table 3: Distribution of endoscopic findings in group with atypical symptomatology

Endoscopic Findings	No.	Percentage	Histopathological findings
Normal	30	30	-
Gastritis / pan gastritis	41	41	-
Hiatus hernia	31	31	-
Duodenitis	15	15	-
Reflux esophagitis	10	10	
Gastric ulcer	3	3	3(3%)
Duodenal ulcer	2	2	2(2%)
Others			
(candidial esophagitis,celiac disease)	3	3	3(3%)

Table 4: Comparison of preoperative and postoperative relief of symptoms.

Group	No. of patients	Persistence of symptoms post operatively (7^{th} day)	Persistence of symptoms post operatively (14^{th} day)	Persistence of symptoms post operatively (1 month)	Persistence of symptoms post operatively (6 months)	Relief rate %
Group I with UGE negative	33	0	0	0	0	100
Group II with UGE negative	30	0	0	0	0	100
Group I with UGE positive	35	20	9	3	1	94.29
Group II with UGE positive	72	45	15	7	2	95.83

*Relief rate is defined as a number of those with given symptoms preoperatively who do not have the symptoms postoperatively

The therapeutic approach was changed in a total of 9(5.29%) out of which 4 patients were diagnosed with ulcer and malignancy in pathological reports in group I and 5 who were diagnosed ulcer and celiac disease in group II. Cholecystectomy was performed in 161 (94.71%) patients.

All the patients with abnormal endoscopic findings were prescribed proton pump inhibitors, dietary and life style changes and Helicobacter Pylori therapy following positive Helicobacter Pylori in biopsies. In patients with typical pain and UGE negativity showed complete relief of

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symptoms within one week post-operatively. However, patients with atypical pain had persistence of symptoms, which were relieved on specific treatment and life style changes.
Table 4 showing that a 100% relief of symptoms in case of patients who showed no findings on UGE after the cholecystectomy and gradual relief of symptoms in case of patients who UGE have positive findings at the end of 6 months follow-up. In patients who have gastric tumors and celiac disease there is no relief of symptoms even after appropriate procedure and dietary regulations.

Discussion

Majority of patients with complaints of chronic abdominal pain undergo ultrasound examination which has in recent times emerged as a routine and inexpensive diagnostic technique. Post examination, gall stones remain the main focus of treatment for surgeons and almost all patients with proven gall stones are referred to undergo laparoscopic cholecystectomy, a common and a safe procedure. In these scenarios, further investigations to rule out other pathologies causing similar symptoms are seldom considered.
An UGI endoscopy has been recommended in patients with nonspecific upper abdominal discomfort or persistent pain after laparoscopic cholecystectomy. Most of the patients presenting to general practitioners with chronic or colicky upper abdominal pain undergo ultrasound examination. With the ultrasound detection of gallstones the main focus of the attending clinician stays around treating the gallstones and further investigations to rule out other pathologies that may produce similar symptoms are seldom considered.[9]
A proportion of patients experience similar pain after laparoscopic cholecystectomy. The cause of this pain may be gastritis, peptic ulcer disease, reflux oesophagitis, hiatus hernia or other diseases. These patients should first have been investigated to rule out gastro duodenal pathology before undergoing operation to remove gallstones. This approach will not only decrease persistence of symptoms but can also be helpful in early detection gastro duodenal pathologies.
Rassek et al recommends that investigation of the upper gastrointestinal tract must precede an elective cholecystectomy. In his study, out of 960 patients for elective cholecystectomy, 589 underwent gastroscopy, 56% had normal gastroscopy, 11.3% (113 patients) underwent a change in plan of therapy because of the endoscopy findings. Diettrich et al also suggested preoperative endoscopy of the Upper GI tract in patients undergoing cholecystectomy to exclude other gastrointestinal disorders. In his study, 31/100 patients had abnormalities on UGE resulting in changed plan of therapy. Schenk et al suggested that because of the high incidence of simultaneous disease in the upper GI tract, preoperative UGE should be performed before elective surgical therapy of symptomatic cholelithiasis. In his study, 1064/1143 (93.1%) patients underwent OGD and 30.2% (345 patients) had pathological findings.[10-12]
Of these, 68.3% were inflammatory in nature. 28 patients (2.5%) underwent additional GI surgical procedures along with cholecystectomy and bile duct exploration. Two hundred and twenty seven (19.8%) underwent pharmacological treatment of the GI disease after their biliary surgery. Thybusch et al, discuss the value and therapeutic implications of routine UGE before cholecystectomy. In his study, 160/338 (47.3%) patients undergoing cholecystectomy also had UGE. Among those he observed peptic ulcer disease (6.8%), gastric erosions (1.8%), gastritis (25.7%), polyps (3.2%), hiatus hernia (4.7%), oesophagitis (3%) and gastric cancer (6%). Findings on OGD did not necessarily correlate with clinical symptoms. In 8.3% of patients the UGE findings influenced management and surgery was postponed awaiting medical treatment. Further, two patients with gastric cancer underwent gastrectomy. Sosada et al recommend routine pan endoscopy for each patient who qualifies to undergo laparoscopic cholecystectomy. He suggested that in asymptomatic cholelithiasis, pain is

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because of a peptic ulcer. Out of 2800 treated for cholelithiasis, UGE which was performed 1-4 days prior to surgery, showing pathological changes in the stomach or duodenum in 1187 (42%) patients; gastric ulcer in 179 (6.4%), duodenal ulcer in 127 (4.5%), gastritis in 375 (26.3%), polyps in 143 (5.1%) and cancer in 3 (0.1%) patients. The surgery was delayed for patients with ulcers and they were treated appropriately. 16 patients were asymptomatic after healing of the ulcer, thus they were proven to have asymptomatic cholelithiasis and a cholecystectomy was not performed. Rashid et al, in his study, the routine use of UGI endoscopy resulted in detection of other coexisting pathologies in about one third (33%) of patients, which lead to a change in the management plan for these patients.[13-15]

Also they noticed that, the recurrence or persistence of symptoms was significantly higher in patients who were not scoped prior to surgery (33%) in comparison to patients who were scoped where only (3.3%) had recurrent or persistent symptoms and suggested that, UGI endoscopy should be considered as a routine investigation before laparoscopic cholecystectomy especially in those selected group of patients, who do present with overlapping upper GI symptoms. Razdan et al, in his study on significance of upper gastrointestinal endoscopy before cholecystectomy, 30 patients with diagnosis of cholelithiasis underwent UGI endoscopy before cholecystectomy.

Post-operative symptoms relief was recorded and findings were corroborated with UGI endoscopy results. They found that majority of patients belonged to age group 35 to 50 years (46.6%). 28 patients (93.3%) presented with pain abdomen which was the most common symptom. Total of 23 (76.6%) patients had abnormal finding on endoscopy. Gastritis was the commonest abnormality seen in 18 (60%) patients. All patients with persistence of symptoms beyond 1 and 3 months had abnormal endoscopic findings preoperatively. A Faisal et al, in their study on role of upper gastrointestinal endoscopy in prevention of post cholecystectomy pain prior the elective surgical therapy of chronic cholecystitis, 92 cases diagnosed ultrasonographically to have chronic calculus cholecystitis with mean age 37.5 yrs and SD of +/- 5.6yrs those cases were subjected to UGE before undergoing cholecystectomy.[16,17]

In this study 72% patients have upper GIT pathologies associated with chronic cholecystitis. Karmacharya A et al, in his study, out of 96 patients, 53 (55.2%) presented with typical pain and 43 (44.8%) presented with atypical pain. All the patients were subjected to upper gastrointestinal endoscopy (UGE) and 53 (55.2%) had normal findings and 43 (44.8%) had various lesions. Patients with typical pattern of pain had normal endoscopic findings and those with atypical pain had pathology in UGE ($p<0.001$). Serious pathology resulting to change of the planned treatment was found in three cases (3.12%). Among them two had gastric carcinoma and one had active peptic ulcer disease. The relief rate after the cholecystectomy was significant in patients with typical pain than among those with atypical pain ($p<0.001$). The commonest post cholecystectomy symptoms were heart burn (10%), abdominal discomfort (9%) and dyspepsia (7%).[18]

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UGI endoscopy findings, Out of 100 patients, 30(30%) patients showed normal findings and 70(70%) patients showed abnormal findings in group II with atypical symptoms subjected to biopsy in case of ulcer or any abnormal pathology. Most common being the gastritis(41%), hiatus hernia (31%), duodenitis (15%), reflux oesophagitis (10%), gastric ulcer (3%), duodenal ulcer (2%), others including candidialoesophagitis and celiac disease (3%), with

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The routine use of UGE before laparoscopic cholecystectomy in the presence of proven gallstones may also result in change of the management plan due to detection of other pathologies such as peptic ulcer disease or hiatus hernia, thereby reducing peri-operative persistence of symptoms.

Conclusion

Pre-elective and routine use of UGE before laparoscopic cholecystectomy helps in reducing persistence of symptoms and in treatment management.

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