Research Article

Upper gastrointestinal endoscopy prior to laparoscopic cholecystectomy: a clinical study at a tertiary care centre in central India

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ABSTRACT

Background: Cholelithiasis is one of the most common problems encountered in surgery. It's an immense challenge to discriminate between gastrointestinal symptoms due to gall stones or any other causes. These gastrointestinal symptoms have been related to gallstones but causal relationship has not been established yet, which is highly discouraging for the operating surgeon. An objectives of the study was to analyze the use of upper gastrointestinal endoscopy (UGE) as a pre-operative investigative tool in gallstone disease patients presenting with chronic dyspepsia.

Methods: This prospective observational study was conducted on 216 patients at Department of Surgery at Aurobindo PG institute. The data collected from the patients included personal information, presenting signs and symptoms, investigations including USG, UGE finding, biopsy reports if present, medications, surgery details, any post-operative complications. Statistical analysis done by chi-square test.

Results: Out of total patients, the mean age was 38.61 ± 13.2 years. The male to female ratio was 1:3. one hundred and sixty (74.1%) patients had multiple stones. UGE showed a predominance of positive findings in group II with atypical symptoms than in group I ($p=0.004$). Therapeutic approach was changed in a total of 10 (4.6%), who were diagnosed with ulcer, malignancy and celiac disease. Cholecystectomy was performed in 206 (95.4%) patients. The relief rate is highest in group I with negative UGE than with group II.

Conclusions: Besides its cost effectiveness, UGE is potentially helpful in reducing the incidence of postoperative persistence of symptoms. Thus UGE has a vital role in the initial evaluation and investigation of patients with symptomatic gallstone patients.

Keywords: Cholelithiasis, Endoscopy, Dyspepsia, USG, Cholecystectomy

INTRODUCTION

Cholelithiasis is one of the most common problems encountered in surgery. It's an immense challenge to discriminate between upper gastrointestinal (UGI) symptoms due to gall stones or any other causes. These gastrointestinal symptoms have been related to gallstones but causal relationship has not been established yet. The persistence of abdominal symptoms even after

cholecystectomy is highly discouraging for surgeons. Coexistence of concurrent upper gastrointestinal problems in gallstones disease patients may have attributed to the post cholecystectomy syndrome.¹⁻³ Although, gallstone disease is asymptomatic in the vast majority of individuals, it is frequently accepted that removal of the gallbladder is the best treatment for symptomatic gallstone disease. However, less emphasis

has been on patient selection and symptomatology of this disease in order to understand prevailing symptoms after surgery.

Evaluation of gall stone disease is an immense challenge as to ascertain whether gallstones are responsible for symptoms or incidental findings. Differentiating between these two situations is important, because the prevalence of both conditions is common in the general population. This study focuses on the yield of upper gastrointestinal endoscopy as an investigative modality to find out other associated disorders of upper gastrointestinal tract in patients with ultra-sonogram proven gallstones presenting with dyspeptic symptoms. The objective of this study was to analyze the use of upper gastrointestinal endoscopy (UGE) as a pre-operative investigative tool in gallstone disease patients presenting with chronic dyspepsia.

METHODS

This hospital based prospective observational study was conducted from Jan 2013 to Dec 2014 in the Department of Surgery, Sri Aurobindo hospital and PG teaching institute (SAMCPGI). Institutional approval was taken for the study. Informed consent was taken from each participant. 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 216 patients were included in the study who were divided in to two groups based on symptomatology, first group (N-98) in which patient present with typical symptoms of biliary colic and second group (N-118) 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 7th, 14th, 30th day, and 6 months to evaluate the presence of any dyspeptic symptoms.

Inclusion criteria

- 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.

Exclusion criteria

- Patients with acute cholecystitis or general condition are not stable.

- Patients not willing to participate in study and lost to follow-up.

RESULTS

This observational study includes a total of 216 patients, age ranges from 25-72 years for both female and male with mean age of 38.61±13.2 years. Youngest patient was 27 years old whereas oldest patient was 70 years for male and youngest patient was 25 years old whereas oldest patient was 72 years for female. In present study 71.3 % (N-154) of them were female and 27.7% (N-62) were males, there was a female preponderance with a male to female ratio of 1:3.5 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	98 (42.5%)	118 (57.5%)
Mean age of presentation (years)	41.72 years	35.5 years
Male/Female ratio	1:3.1	1:4.6
UGI endoscopy positive findings	51(52.1%)	84(71.2%) (p-0.004)
History of attack of cholecystitis	75(76.5%)	48(40.7%)

*p value <0.005 is significant.

Table 1 showing the comparison between the two groups which showed that mean age of presentation in group I is 41.72years and in group II is 35.5 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 75 (76.5%) of patients in group I and 48(40.7%) of patients in group II.

Table 2 shows UGI endoscopy findings, Out of 98 patients, and 47 (47.9%) patients showed normal findings and 51 (52.1%) 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 (30.6%), hiatus hernia (10.2%), duodenitis (10.2%), reflux oesophagitis (7.14%), gastric ulcer (1.02%), duodenal ulcer (1.02%), others including gastric polyp and gastric tumors (3.06%), 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	47	47.9	Not done
Gastritis / pan gastritis	30	30.6	Not done
Hiatus hernia	10	10.2	Not done
Duodenitis	10	10.2	Not done
Reflux esophagitis	7	7.14	Not done
Gastric ulcer	1	1.02	1(1.02%)
Duodenal ulcer	1	1.02	1(1.02%)
Others(gastric polyp, gastric tumors)	3	3.06	3(3.06%)

Table 3 shows UGI endoscopy findings, Out of 118 patients, 34(28.8%) patients showed normal findings and 84(71.2%) 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(40.67%), hiatus hernia (30.51%), duodenitis (15.28%), reflux oesophagitis

(9.32%), gastric ulcer (2.54%), duodenal ulcer (1.69%), others including candidial oesophagitis and celiac disease (3.39%), 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	Histopathologic al findings
Normal	34	28.8	Not done
Gastritis / pan gastritis	48	40.67	Not done
Hiatus hernia	36	30.51	Not done
Duodenitis	18	15.28	Not done
Reflux esophagitis	11	9.32	Not done
Gastric ulcer	3	2.54	3(2.54%)
Duodenal ulcer	2	1.69	2(1.69%)
Others (candidial esophagitis,celiac disease)	4	3.39	2(1.69%)

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	47	0	0	0	0	100
Group II with UGE negative	34	0	0	0	0	100
Group I with UGE positive	51	36	15	7	2	96.1
Group II with UGE positive	84	44	24	10	3	96.3

*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 10(4.6%) out of which 4(4.08%) patients were diagnosed with ulcer and malignancy in pathological reports in group I and 6(5.08%) who were diagnosed ulcer and celiac disease in group II. Cholecystectomy was performed in 206 (95.4%) 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 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

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.⁴

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.⁵⁻⁷

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 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.⁸⁻¹⁰

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.^{11,12}

32 patients have evidence of H-pylori infection detected by urea breath test. In this study 77.2% 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%).¹³

In our study on UGI endoscopy, in group I, 47 (47.9%) patients showed normal findings and 51 (52.1%) patients showed abnormal findings. Most common being the gastritis (30.6%), hiatus hernia (10.2%), duodenitis (10.2%), reflux oesophagitis (7.14%), gastric ulcer (1.02%), duodenal ulcer (1.02%), others including gastric polyp and gastric tumors (3.06%), with histopathological finding suggestive of *H. pylori* related ulcers in stomach and duodenum, carcinoma stomach. In group II, 34 (28.8%) patients showed normal findings and 84 (71.2%) ($p = 0.004$) patients showed abnormal findings. Most common being the gastritis (40.67%), hiatus hernia (30.51%), duodenitis (15.28%), reflux oesophagitis (9.32%), gastric ulcer (2.54%), duodenal ulcer (1.69%), others including candidial oesophagitis and celiac disease (3.39%), with histopathological finding suggestive of *H. pylori* related ulcers in stomach and duodenum and celiac disease.

The therapeutic approach was changed in 4 (4.08%) who were diagnosed with ulcer and malignancy in pathological reports in group I and 6 (5.08%) who were diagnosed ulcer and celiac disease. Cholecystectomy was performed in 206 (95.4%) patients. All the patients with abnormal endoscopic findings were prescribed proton pump inhibitors and *Helicobacter Pylori* therapy following positive *Helicobacter Pylori* in biopsies.

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

In our study, the prevalence of significant findings was higher in females than males in symptomatic patients with male to female ratio of 1:3.5 with a mean age of 38.61 years. Routine use of UGE resulted in detection of other coexisting pathologies in over half (62.5%) of patients. All of these findings lead to a change in the management plan for these patients. The endoscopic findings were treated before laparoscopic cholecystectomy leading to a very low rate of postoperative persistence of symptoms (3.3%).

Cholelithiasis can present with a complex combination of clinical symptoms which may resemble the presentation

of other gastrointestinal diseases. Hence, the use of routine preoperative investigations like upper GI endoscopy prior to planning surgical treatment of cholelithiasis may help to identify other potentially treatable medical conditions and hence may reduce overall cholecystectomy rates.

Besides its cost effectiveness, it may potentially help in reducing the incidence of postoperative persistence of symptoms. Thus upper gastrointestinal endoscopy has a vital role in the initial evaluation and investigation of patients with symptomatic gallstone patients and should be done in all relevant cases.

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