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Diagnostic Value of Upper Gastrointestinal Endoscopy Prior to Cholecystectomy

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<http://dx.doi.org/10.5772/52520>

1. Introduction

Gallstone disease remains one of the most common medical problems leading to surgical intervention. It occurs in up to 20% of men and 35% of women in Western societies [1, 2]. Every year, more than 500,000 cholecystectomies are performed in the US [3]. The resultant direct and indirect cost of gallbladder disease represents a consumption of ~\$6.2 billion annually in the U.S., constituting a major health burden that has increased more than 20% over the last 3 decades [4]. Hence, the treatment of gallstones and its complications (cholecystitis, pancreatitis and bile duct obstruction) contributes substantially to healthcare costs [2]. The term “symptomatic gallstones” is widely used to describe symptoms arising secondary to presence of gallstones. There are wide range of gastrointestinal symptoms have been linked to gallstones but causal relationship has not been established yet [3, 5]. Although, gallstone disease is asymptomatic in the vast majority of individuals, it is commonly accepted that removal of the gallbladder is the best treatment for symptomatic gallstone disease [6]. However, less focus has been on patient selection and typical or common symptoms of this disease in order to understand prevailing symptoms after surgery. Cholecystectomy is a commonly performed abdominal surgical procedure performed for treatment of symptomatic gallstones and prevention of complications. Nevertheless, given the high proportion of non-specific abdominal symptoms in the people with known gallstones may lead to unjustifiable cholecystectomies [3, 7].

2. Is it a biliary pain or not?

Gallstones found incidentally in the investigation of gastrointestinal symptoms may become falsely incriminated to explain pathology that arises outside the biliary tree [8]. The majority

of patients presenting to general practitioners with chronic or colicky upper abdominal pain undergo ultrasound examination. Ultrasound is non-invasive, readily available and inexpensive. After 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. Almost all of the patients with proven gallstones are referred to surgeons with a view to performing laparoscopic cholecystectomy [6]. With the advancement in laparoscopic skills, laparoscopic cholecystectomy has become a very common and safe operation [9]. As cholecystectomy become a safer and a more routine laparoscopic procedure [9], patients may consent to surgery without as much consideration as they had done in the past, when it was performed with a much more invasive open technique [10].

The finding of gallstones on imaging studies but without symptoms is the most common presentation [3, 6]. On the other hand patients with gallstones can be presented with one of the known complications like acute cholecystitis, acute pancreatitis or obstructive jaundice. Typically patients with symptomatic cholelithiasis complain of recurrent epigastric pain which happens one or two hours after meals and could last for few hours [3, 6]. These recurrent attacks are normally aggravated by fatty meal and may associate with nausea and vomiting. Although biliary colic was specific for gallstones, 80% of the referred patients with gallstones presented with other abdominal symptoms [11]. Sometimes, patients have mixture of atypical upper GI symptoms and discovered to have gallstones on imaging studies [5]. The latter group where inappropriate cholecystectomies thus performed are likely to be associated with poor symptomatic outcome [6].

Persistent pain or the so-called 'postcholecystectomy syndrome' is a common occurrence and varies in frequency between 6% and 47% [12-15]. Therefore, the identification of patients most likely to benefit from cholecystectomy is critically important [8, 10]. Other causes of persistent postoperative pain may be peptic ulcer disease, hiatus hernia or other gastrointestinal diseases. These patients should first have been investigated to rule out gastroduodenal pathology before undergoing operation to remove gallstones [5]. This approach will not only decrease persistence of symptoms but can also be helpful in detecting gastroduodenal pathologies at an early stage [5, 6].

4. OGD prior surgical treatment of gallstones: Is it of a value?

Many studies have emphasized on the potential therapeutic role of upper gastrointestinal tract endoscopy in the presence of overlapping upper GI symptoms (table 1) [16]. For instance, Rassek et al. suggests that endoscopic examination of the upper gastrointestinal tract is highly recommended prior to an elective cholecystectomy. In his study, 589 of 960 patients underwent gastroscopy ahead of elective cholecystectomy. Although, 56% had normal gastroscopy, 11.3% (113 patients) underwent a change in plan of management because of the OGD findings and 11 patients were discharged after conservative medical therapy (1.1%) [17].

In another prospective study, the routine OGD of the upper gastrointestinal tract was carried out in 100 patients before they underwent elective cholecystectomy for gallstones, Dietrich et al. found that 31/100 patients had abnormal OGD which changed their subsequent plan of treatment. In 18% of patients, the cholecystectomy was deferred for 4 to 8 weeks, after additional medical treatment and 7 patients were discharged on only conservative medical treatment. Therefore, he recommended that preoperative endoscopy of the upper gastrointestinal tract should be used in patients undergoing cholecystectomy to rule out other gastrointestinal disorders [18]. Likewise, another study by Schwenk et al, 1143 patients underwent preoperative OGD or upper gastrointestinal series prior cholecystectomy. The incidence of pathological findings was 30.2% (345 patients), with 68.3% of findings was of inflammatory in nature. In 28 patients (2.5%) cholecystectomy or bile duct exploration was combined with an additional gastrointestinal surgical procedure. In 227 cases (19.8%) biliary surgery was followed by medical treatment of co-existing gastrointestinal diseases. Because of the high incidence of simultaneous Upper GI diseases, they recommended that routine preoperative gastroscopy is indicated before elective surgical treatment of gallstones disease [19].

Thybusch et al. also evaluated the role and therapeutic implications of routine OGD before cholecystectomy. In his study, endoscopy of the upper digestive tract was performed in 338 consecutive patients undergoing cholecystectomy. Nearly 50% of patients had pathological findings on OGD examination. These findings varied from peptic ulcers (6.8%), gastric erosions (1.8%), gastritis (25.7%), polyps (3.2%), hiatal hernias (4.7%), oesophagitis (3%) and gastric cancer (0.6%). The management plan had to be changed in 8.3% of patients based on those OGD findings. Although these findings did not correlate with patients' symptoms, 26 patients received medical treatment prior to undergoing cholecystectomy. Two patients with gastric cancer underwent gastrectomy. These results underline the importance of a routine gastroscopy before elective cholecystectomy [20].

In their retrospective review of 143 patients who presented with atypical abdominal pain, gallstones, and underwent EGD before their cholecystectomy, Yavorski et al, recommend that patients who present with cholelithiasis and atypical abdominal pain undergo preoperative OGD, as they found that at least 9 per cent of the patients in their study had significant findings that altered their management [21]. On the hand, Sosada et al. recommended the performance of routine OGD for each patient who is elected to undergo laparoscopic cholecystectomy [22]. He suggested that in patients with asymptomatic gallstones, abdominal pain is most likely secondary to underlying peptic ulcer disease. In this study, OGD which was performed 1–4 days prior to surgery in 2800 patients. Pathological findings were identified 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 had complete resolution of symptoms after medical treatment, therefore cholecystectomy was not performed [22]. Similarly, selective endoscopy has also been recommended by Beyermann et al. [23]. However, only 11% of their total study cohort had endoscopy out of 610 patients. But even with those figures they have suggest-

ed that routine OGD should be performed in patients with history of upper abdominal pain and discomfort [23].

In the same way, Rashid et al evaluated the routine use of OGD prior laparoscopic cholecystectomy [24]. In his retrospective analysis, the routine use of OGD resulted in detection of other coexisting pathologies in about one third (33%) of patients. All of these OGD findings lead to a change in the management plan for these patients. Also they noticed that, the recurrence or persistence of symptoms was significantly higher in patients who were not scoped prior surgery (33 %) in comparison to patients who were scoped where only (3.3%) had recurrent or persistent symptoms. Therefore they suggested that, OGD 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. The data suggest that routine use of OGD before laparoscopic cholecystectomy will help to reduce postoperative persistence of symptoms and may reduce overall cholecystectomy rates with beneficial clinical and economical outcomes [24].

Although there is growing evidence that preoperative OGD is useful in identifying medically treatable diseases in patients undergoing surgical removal of gallstones, few studies however suggested that OGD prior surgical removal of gallstones has little or no influence on the postoperative outcome [25, 26]. For instance, Ure et al, suggested that routine endoscopy before laparoscopic cholecystectomy is neither clinically useful nor cost effective in patients with symptomatic gallstone disease [25]. Nevertheless this suggestion was related exclusively to patients with typical gallstone symptoms. Besides, even in patients typical biliary, OGD abnormalities were found in 60 patients (16.0 %); these included peptic ulcer (n = 14), gastric erosions (n = 15) and oesophagitis (n = 11). Thirty patients were treated medically and two by endoscopic polypectomy. In four patients endoscopy led to cancellation of cholecystectomy [25]. Similarly, the significance of preoperative OGD in patients scheduled for laparoscopic cholecystectomy was also evaluated by Al-Azawi et al [26]. They compared a group of patients who underwent OGD before laparoscopic cholecystectomy and a group of patients who underwent laparoscopic cholecystectomy with no preoperative OGD. In this study, 218(54.5%) of 400 patients underwent OGD prior cholecystectomy. In the OGD group, there were normal findings in 98 (45%) patients. Disorders such as hiatus hernia (21%), acute duodenal ulcers (3.6%), esophagitis (3.6%), gastric ulcer (0.4%), and Barrett's oesophagus(0.4%) were among the findings. Laparoscopic cholecystectomy was avoided in six patients with chronic cholecystitis. However, in this study, the use of preoperative OGD had no apparent benefit in reducing the incidence of postoperative residual abdominal pain. Therefore they suggest that OGD prior to laparoscopic cholecystectomy does not have an impact on postoperative residual abdominal pain. Despite that, they have also concluded that OGD can disclose other gastroesophageal disorders with similar symptoms to gallstones and may change the course of the planned surgery in chronic cholecystitis[26].

Study	Study population	Results/ recommendation
Rassek et al, 1988 [17]	589 patients	11.3% (113 patients) underwent a change in plan of management because of the OGD findings and 11 patients were discharged after conservative medical therapy (1.1%)
Diettrich et al, 1990 [18]	100 patients	31/100 patients had abnormal OGD, 18% of patients had their cholecystectomy differed for 4 to 8 weeks, after additional medical treatment, 7 patients were discharged on only conservative medical treatment
Beyermann et al, 1992 [23]	660 patients	Routine OGD should be performed in patients with history of upper abdominal pain and discomfort
Schwenk et al, 1992 [19]	1143 patients	30.2% (345 patients) had abnormal findings, 28 patients (2.5%) cholecystectomy or bile duct exploration was combined with an additional gastrointestinal surgical procedure. In 227 cases (19.8%) biliary surgery was followed by medical treatment of co-existing gastrointestinal diseases.
Ure et al, 1992 [25]	376 patients	OGD abnormalities were found in 60 patients (16.0 %), Thirty patients were treated medically and two by endoscopic polypectomy. In four patients endoscopy led to cancellation of cholecystectomy
Thybusch et al, 1996 [20]	338 patients	Nearly 50% of patients had pathological findings on OGD examination. The management plan had to be changed in 8.3% of patients based on those OGD findings. 26 patients received medical treatment prior to undergoing cholecystectomy. Two patients with gastric cancer underwent gastrectomy.
Yavorski et al, 1995 [21]	143 patients	9 per cent of the patient population will have significant findings that may alter their management. Patients who present with cholelithiasis and atypical abdominal pain is recommended to undergo preoperative OGD.
Sosada et al, 2005 [22]	2800 patients	Pathological findings were identified in 1187(42%) patients, surgery was delayed for patients with ulcers until they finished their medical treatment. 16 patients had complete resolution of symptoms after medical treatment, therefore cholecystectomy was not performed
Al-Azawi et al, 2006 [26]	400 patients	Preoperative OGD did not reduce the incidence of postoperative residual abdominal pain.
Rashid et al, 2010 [24]	121 patients	The recurrence or persistence of symptoms was significantly higher in patients who were not scoped prior surgery (33 %) in comparison to patients who were scoped where only (3.3%) had recurrent or persistent symptoms.

Table 1. Studies evaluated the role of oesophagogastropscopy prior cholecystectomy.

5. Conclusion

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 OGD prior 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.

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