

Full Length Research paper

The role of laparoscopic cholecystectomy in alleviating gastrointestinal symptoms

Sh. Mehrvarz¹, S. A. Fanaei¹ and S. A. Ziaee^{2*}

¹Department of Laparoscopic Surgery, Baqiyatallah University of Medical Science, Tehran, Iran.

²Emergency Department, Erfan Hospital, Tehran, Iran.

Accepted 17 March, 2010

Laparoscopic cholecystectomy is the standard treatment for symptomatic gall stone disease. This study is aimed at assessing the effect of the operation on patients' symptoms. 175 unselected consecutive patients admitted for laparoscopic cholecystectomy between June 2007 and June 2008 were recruited into the study. A standard questionnaire examined pain and other dyspeptic symptoms. Histories of psychiatric disturbances and gastroscopy were also evaluated. Bloating, glubus sensation and regurgitation were not cured by laparoscopic cholecystectomy. The cure rates for vomiting and non typical pain were in excess of 70%. Our study confirms that some symptoms are not alleviated by the operation. Furthermore, surgeons should be aware that the sub-group of patients whose preoperative symptoms include bloating, regurgitation and glubus sensation and who have required psychotropic drugs may in fact have 'silent gall stones' and irritable bowel syndrome. Such patients are unlikely to benefit from laparoscopic cholecystectomy.

Key words: Laparoscopic cholecystectomy, bloating, glubus sensation, regurgitation, gastroscopy.

INTRODUCTION

A few patients continue to have gastrointestinal symptoms after laparoscopic cholecystectomy. The term 'postcholecystectomy syndrome' has been used to describe this condition although the term 'persistent postcholecystectomy symptoms' is a more accurate description (Luman et al., 1996). The study objectives were to describe the prevalence of abdominal symptoms undergoing elective cholecystectomy and to identify the characteristics associated with symptom resolution. In our study, all patients with symptomatic cholelithiasis were included. We specifically wanted to determine whether symptom complexes categorized as dyspeptic or biliary had different cure rates and whether there was a relationship between postoperative symptoms and patient based assessment of operative success.

MATERIALS AND METHODS

Patients

175 unselected consecutive patients admitted for laparoscopic

cholecystectomy between June 2007 and June 2008 was recruited into the prospective study. All patients had either been placed on an elective operating list after assessment by surgical teams, or underwent urgent surgery after admission to Baqiyatallah hospital for acute gall stone related emergencies. The diagnosis of cholelithiasis was confirmed by ultrasonography in all cases. Patients were excluded if open cholecystectomy had been planned or if they were unable to cooperate in answering the questionnaires and who suffer from complication. Indications for cholecystectomy and details of investigations performed before surgery were obtained from medical notes. The human-subjects committee of the University of Baqiyatallah approved the study protocol. All patients provided written informed consent.

Questionnaires

The symptom profile of the patients was evaluated by one of us (WL) not involved in surgical management. A standard questionnaire examined pain other dyspeptic symptoms (nausea, vomiting, heartburn, food intolerance, and glubus sensation and bloating) (Figure 1). Histories of psychiatric disturbances were also evaluated. Questionnaires were administered to patients before surgery and 4 month after surgery. Patients were followed up in routine outpatient review or by telephone interview. Laparoscopic cholecystectomy was carried out as a four trocar technique with electrocautery dissection. Intra-operative cholangiography was not routinely performed. Patients with a history of jaundice, abnormal liver function tests, dilated common bile duct, and pancreatitis

*Corresponding author. E-mail: sali_ziaee@yahoo.com.

ضمائم

THANK YOU FOR YOUR WILLINGNESS TO HELP
 TO ANSWER THE QUESTIONS PLACE A TICK IN THE APPROPRIATE BOX
 IF YOU ARE UNSURE OF THE ANSWERS TICK "NO".
 Kindly return the questionnaire in the FREEPOST envelope. No stamp is required.

What is your...?
 Name: _____ Age: _____ Sex: Male Female

Address: _____

Post code: _____ Telephone number: _____

What is/was your occupation: _____
 What is your education: _____
 What is/was your partner's occupation: _____

Are you:

Employed full time?	<input type="checkbox"/>	Housewife?	<input type="checkbox"/>
Part time?	<input type="checkbox"/>	Retired?	<input type="checkbox"/>
Unemployed?	<input type="checkbox"/>	Student?	<input type="checkbox"/>

REMEMBER, IF YOU UNSURE OF THE ANSWER TO ANY OF THE QUESTION BELOW, THEN TICK "NO"

Have you had pain or discomfort in the place shown in the picture in the last year?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
If Yes to the last question then: Have you had this pain or discomfort on more than six occasions in the last year?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Did you see a doctor about it?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Have you had a feeling of excess wind or fullness in the place shown in the picture after eating or drinking in the last year?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
If Yes to the last question then: Have you had this feeling on more than six occasions in the last year?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Did you see a doctor about it?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Heartburn is a burning or ache behind the breast bone in the chest, that is not due to angina or heart trouble.			
Have you had heartburn in the last year?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
If Yes to the last question then: Have you had this feeling on more than six occasions in the last year?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Did you see a doctor about it?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
When lying in bed have you had heartburn during the last year?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
If Yes then: Has this happened on more than six occasions in the last year?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Did you see a doctor about it?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Do you get heartburn only when lying in bed?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Does this heartburn waken you from your sleep?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Have you had a very sour or acid tasting fluid at the back of your throat in the last year?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
If Yes: Has this happened on more than six occasions in the last year?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Did you see a doctor about it?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Have you had a feeling of wanting to throw out (nausea) in the last year?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
If Yes: Has this happened on more than six occasions in the last year?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Did you see a doctor about it?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Have you actually thrown up (vomited) in the last year?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
If Yes: Has this happened on more than six occasions in the last year?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Did you see a doctor about it?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Have you had difficulty swallowing (food sticking in your throat) in the last year?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
If Yes: Has this happened on more than six occasions in the last year?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Did you see a doctor about it?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Have you ever been diagnosed as having a gastric (stomach) or duodenal ulcer?		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Have you ever had a barium meal examination? (You have to drink a white liquid before the X-rays are taken)		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Have you ever had an endoscopy or gastroscopy? (A tube with a light source is swallowed to look inside the stomach)		Yes <input type="checkbox"/>	No <input type="checkbox"/>

Is there anything, which we have not asked about, and which you think would be important for us to know?

THANK YOU ONCE AGAIN FOR YOUR GENEROUS ASSISTANCE.
 KINDLY CHECK THAT ALL QUESTIONS ARE ANSWERED, EVEN THE "NO" ONES, THEN PLEASE RETURN THE QUESTIONNAIRE IN THE FREEPOST ENVELOPE

Figure 1. A questioner of the trial.

Table 1. Incidence of preoperative symptom.

Symptom	No of patients (%)	Frequency (%)
Dyspeptic symptom	50	33
Nausea	37	74
Vomiting	20	40
Heartburn	13	26
Non typical pain	14	28
Bloating	21	42
Regurgitation	11	22
Glubus sensation	2	4
Biliary type pain	115	77

Table 2. Prevalence of preoperative and postoperative symptoms.

Symptoms	No. of patients		Cure rate (%)* and P value+
	Preoperative	Postoperative	
Nausea	37	17	54 and S
Vomiting	20	2	90 and S
Heartburn	13	5	61.5 and S
Non typical pain	14	4	71.42 and S
Bloating	21	16	23.8 and NS
Regurgitation	13	8	38.4 and NS
Glubus sensation	2	2	0 and NS
Biliary type pain	115	9	92 and S

+(χ^2 ; $p < 0.05$ was accepted as significant).

*Cure rate is defined as the proportion of those with a given symptom preoperatively who did not have the symptom postoperatively.

underwent preoperative endoscopic retrograde cholangiopancreatography (ERCP) and sphincterotomy.

Statistical analysis

Simple comparisons of preoperative symptoms between patients with persistent symptoms after laparoscopic cholecystectomy and those with successful outcome were performed (χ^2 ; $p < 0.05$ was accepted as significant and Mc Nemar test for numerical variables). Analysis of the associated symptoms was sub-divided into dyspeptic and non dyspeptic symptoms.

RESULTS

17 patients were excluded from the final analysis because they refused to fill the questioner and 10 patients suffer from surgery complication. The remaining 148 patients were all successfully followed up. There were 66 men (44%) and 84 women (56%). The median age was 55.2 (range 21 - 82) years.

Patients were divided into two groups (biliary type pain and dyspeptic group). Patients with biliary type pain presented with recurrent attacks of right hypochondriac pain which radiated to the back. In each patient this pain was episodic with exacerbation of several hours. Most of these patients were free of pain between exacerbations, but a few had persistent discomfort between the acute

attacks.

Preoperative characteristics

Table 1 shows the prevalence of preoperative dyspeptic symptoms. The common dyspeptic symptoms were nausea (74%), bloating (42%), and vomiting (40%). 115 (77%) reported biliary pain, 130 (87.8%) were diagnosed by symptomatic cholelithiasis and 18 (12.2%) acute cholecystitis.

Postoperative characteristics

Table 2 shows the postoperative characteristics. Bloating, glubus sensation and regurgitation were not cured by laparoscopic cholecystectomy although most patients did not think that this was a failure of cholecystectomy as they did not expect bloating, glubus sensation and regurgitation to be relieved by surgery. The cure rates for vomiting and non typical pain were in excess of 70%. The reported incidence of nausea and vomiting, and after surgery was largely confined to patients who continued to experience pain after surgery. However, the incidence of both type of pain improves significantly after surgery. The incidence of regurgitation and bloating was also low after

Table 3. Difference of gastroscopy and psychiatric medications in dyspeptic symptoms

	Remove of dyspeptic symptoms		+P value
	Yes	No	S
Gastroscopy			
Normal (20 pts)	15	5	
Abnormal (30 pts)	2	28	
Psychotropic usage			
Yes (16 pts)	2	14	
No (34 pts)	15	19	

S = χ^2 ; $p < 0.05$ was accepted as significant).
 Pts = Patients.

laparoscopic cholecystectomy although most patients continued on low fat diet after surgery.

Table 3 indicates that there was a significant difference in patients who had an abnormal gastroscopy and use psychotropic drugs in removal of dyspeptic symptoms. Psychotropic drugs were defined as either current or previous medications with antidepressant or anxiolytic drugs. Abnormal gastroscopy defines as esophagitis, gastritis and peptic ulcer disease.

DISCUSSION

It is proven by many studies that patients with symptomatic gall stone disease exhibit a wide spectrum of symptom, many of which are not relieved by cholecystectomy (Luman et al., 1996; Vander et al., 1993; Craig et al., 2000).

This study has confirmed that some symptomatic outcomes are not influenced by the surgical access which is not similar to other studies. The following symptoms are being related to gall stone disease: nausea, vomiting, heartburn, non typical pain, and biliary type pain. In contrast, bloating, regurgitation and globus sensation do not seem to be related to the disease and are not influenced by cholecystectomy. The varying incidence of persistent symptoms after cholecystectomy can be ascribed to the varying methods of evaluation, wording of questionnaires, and patient case mix.

In our study the most dyspeptic symptoms were removed by cholecystectomy. Some of them which are related to motility symptoms were not influenced by surgery. These results are in keeping with the findings of previous reports that a large percentage of patients with gall stone disease have functional motility disturbances of the gastrointestinal tract, which are called biliary dyskinesia, the symptoms of which are not changed by cholecystectomy. (Walsh and Russell, 1992; Jones et al., 1990; Ros and Zambon, 1987; Stefanini et al., 1974) similarly reported that bloating did not remove it and the use of psychotropic medication was associated with poor

outcome.

Vander et al. (1993) showed that flatulence and fat intolerance did not cure significantly after cholecystectomy. In contrast, Luman et al. (1996) showed that some dyspeptic symptoms such as heartburn did not cure.

In terms of heartburn, removal of the gallbladder in chronically ill patients may increase the risk of perpetuating symptoms by causing a decrease in lower esophageal sphincter pressure, increasing duodenogastric reflux, or inducing sphincter of Oddi dysfunction (Tanaka et al., 1984; Thune et al., 1991; Jazrawi et al., 1993). But in our study the frequent presence of heartburn before cholecystectomy and its relief by this surgical treatment in most patients suggests a causal relation between reflux disease and gall stones.

The disappearance of heartburn postoperatively may be a reflection, however, of the natural history of gastroesophageal reflux disease. In this study, five patients developed this symptom for the first time after cholecystectomy. This may be because of a change in patients dietary habits after cholecystectomy. The results of this symptomatic survey do not confirm this reported finding as symptomatic relief of heartburn by cholecystectomy out-weighed its *de novo* occurrence postoperatively (Luman et al., 1996).

Our finding of the underlying gastric problem on gastroscopy and psychotropic medicine on persistence of a symptom designated by the perception and interpretation of abdominal symptoms also could be a more proximate cause of persistent symptoms. Gwee and Chua (2006) and Lorusso et al. (2003), both showed the effect of IBS and psychological factors on non improving symptoms after cholecystectomy.

Our study confirms that some symptoms are not alleviated by the operation. Furthermore, surgeons should be aware that the subgroup of patients whose preoperative symptoms include bloating, regurgitation and globus sensation and who have required psychotropic drugs may in fact have 'silent gall stones' and irritable bowel syndrome. Such patients are unlikely to benefit from laparoscopic cholecystectomy.

REFERENCES

- Craig RW, Donna A, David J, Jr Robert LK (2000). Relationship Between Persistence of Abdominal Symptoms and Successful Outcome After Cholecystectomy Arch Intern Med. 160:989-995
- Gwee KA, Chua As (2006). Functional dyspepsia and irritable bowel syndrome are they different entities and does it matter? World J. Gastroentrol., 7; 12(17): 2708-2712
- Jazrawi S, Walsh TN, Byrne PJ (1993). Cholecystectomy and oesophageal reflux: a prospective evaluation. Br J. Surg. 80: 50-53
- Jones RH, Lydeard SE, Hobbs FDR, Kenkre JE, WilliamsEI, Jones SJ (1990). Dyspepsia in England and Scotland. Gut, 31: 401-405.
- Lorusso D, Porcelli P, Pezolla F (2003). Persistent dyspepsia after laparoscopic Cholecystectomy: The influence of psychological Factors , Scand J Gastroentology; 38(6): 653-658
- Luman W, Adams WH, Nixon SN (1996). Incidence of persistent symptoms after laparoscopic cholecystectomy: a prospective study. Gut, 39: 863-866.
- Ros E, Zambon D (1987). Postcholecystectomy symptoms. A prospectivestudy of gall stone patients before and two yearsafter surgery. Gut, 28: 1500-1504.
- Stefanini P, Carbone M, Patrassi N, Loriga P, De BernardinisG, Negro P (1974). Factors influencing the long term results ofcholecystectomy. Surg. Gynecol. Obstet., 139: 734-738.
- Tanaka M, Ikeda S, Nakayama F (1984). Change in bile duct pressure responses aftercholecystectomy: loss of gallbladder as a pressure reservoir. Gastroenterology, 87: 1154-1159.
- Thune A, Saccone GTP, Scicchitano JP, Toouli J (1991). Distension of the gallbladderinhibits sphincter of Oddi motility in humans. Gut, 32: 690-693.
- Vander GC, Velpen SM, Shimi A, Cuscheiri (1993). Outcome after cholecystectomy for symptomatic gall stone disease and effect of surgical access: laparoscopic v open approach. Gut, 34: 1448-1451
- Walsh TN, Russell RCG (1992). Cholecystectomy and gallbladder conservation. Br. J. Surg., 79: 4-5.