

DUODENOGASTRIC REFLUX, AN IMPORTANT CAUSE OF POST CHOLECYSTECTOMY SYMPTOMS

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ABSTRACT: The study was conducted in the department of General Surgery and Nuclear Medicine, Sher-i-Kashmir Institute of Medical Sciences from April 1999 to March 2000. Thirty patients with symptoms attributable to ultrasound documented gall stones were included in the study.

Tc-99m Mebrofenin hepatobiliary scanning was used to measure duodenogastric reflux prior to cholecystectomy and also post cholecystectomy.

A significant increase in duodenogastric reflux was demonstrated in seven patients post cholecystectomy. Five from this group of 7 patients presented postoperatively with clinical picture of bile gastritis with chief complaints of burning epigastric pain and bilious vomiting.

Key words: Cholecystectomy, reflux, duodenogastric, gastritis, dyspepsia, Tc- 99m Mebrofenin

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INTRODUCTION

Cholecystectomy remains the commonest major abdominal operation being performed worldwide. The procedure usually results in excellent therapeutic outcome but 20-40% of patients continue to have a variety of gastrointestinal symptoms¹. It encompasses a large number of biliary and non-biliary entities and is rarely due to the operation itself. For the successful treatment of such patients, the diagnosis of the cause of symptoms is of utmost importance. Causes such as retained CBD stones, CBD strictures, papillary tumours, cystic duct remnant, sphincter of oddi dysfunction and peptic ulcer disease can be diagnosed and treated. However, in a subset of patients further investigations will identify no obvious cause for post cholecystectomy complaints, and such patients are believed to have symptoms related to cholecystectomy¹. The cholecystectomy is accompanied by an alkaline shift in gastric pH profiles that is more marked in symptomatic patients. There is much experimental and clinical evidence that gall bladder disease and cholecystectomy can increase duodenogastric reflux²⁻⁶. It is widely recognized that duodenogastric reflux is an important factor in the pathogenesis or symptomatology of several upper gastrointestinal tract disorders including gastritis, oesophagitis and gall stone dyspepsia⁷.

Duodenogastric reflux can occur as a normal physiological event which may assume a pathological role after cholecystectomy due to altered physiology⁴. "Normal reflux" may differ from "abnormal reflux" in frequency,

amounts and duration⁸.

Loss of reservoir function of gall bladder in cholecystectomised patients causes increase in DGR, due to a constant supply of bile in to the duodenum, even when fasting. Another possibility is that the pyloric mechanism may be impaired in patients after cholecystectomy with subsequent pyloric incompetence⁹⁻¹¹.

There is clinical and experimental evidence that regurgitation of duodenal juice into the stomach is capable of damaging the gastric mucosa and cause symptoms. The composition of bile refluxing in to the stomach is altered after cholecystectomy to a composition that is more damaging to gastric mucosa¹²⁻¹³.

MATERIAL AND METHODS

The study was conducted in the Departments of Surgery and Nuclear Medicine at SKIMS. The patients selected from Department of General Surgery had not undergone any other prior gastric or hepatobiliary surgery. Patient with choledocholithiasis, surgical obstructive jaundice, cholangitis, known peptic ulcer disease or biliary tract disease other than cholelithiasis were excluded from the study.

Patients were subjected to cholescintigraphy using Tc-99m Mebrofenin before cholecystectomy and between 2-4 months post cholecystectomy. The dynamic serial images were processed on the computer using a pre-defined processing software (Fig. 1). From the computer generated time activity curve reflux in the stomach area was

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calculated(Fig.2).

Pre-surgery 37 patients were included in the study. All the 37 patients underwent preoperative cholescintigraphy and surgery, however, seven patients were lost to follow up and only 30 patients turned up for postoperative evaluation and scanning. Hence the study is based on these 30 patients.

OBSERVATIONS AND RESULTS

Table 1:

S. No	Patient ID	Age	Sex	Pre-op. Reflux %age	Post-op. Reflux %age
01	NM3	36	F	11	13
02	NM4	38	F	7	9
03	NM5	42	M	13	14
04	NM6	50	F	7	33
05	NM7	45	F	9	16
06	NM8	40	M	10	13
07	NM9	40	F	10	11
08	NM10	50	F	2	37
09	NM11	47	F	21	16
10	NM12	35	F	1	2
11	NM13	52	F	28	33
12	NM14	28	F	6	27
13	NM15	38	M	7	9
14	NM16	28	F	9	12
15	NM17	30	F	22	38
16	NM18	32	F	30	30
17	NM19	35	F	9	12
18	NM20	54	F	6	8
19	NM21	37	F	21	28
20	NM22	55	F	2	34
21	NM23	42	F	2	13
22	NM24	27	F	12	19
23	NM25	37	F	4	5
24	NM26	29	F	10	12
25	NM27	37	F	3	5
26	NM28	45	F	5	7
27	NM29	51	F	15	16
28	NM30	57	F	10	21
29	NM31	47	M	18	18
30	NM32	17	F	9	9

DGR before and after cholecystectomy in the same patients. Insignificant pre-cholecystectomy reflux with significant post-cholecystectomy reflux (n=7) was significant at p value (paired t - test) = < 0.05.

Seven patients showed a significant, more than 14% reflux (DGR) preoperatively. These patients were labelled preoperative refluxes. These patients continued to have a significant reflux postoperatively also.

One patient showed a decrease in DGR from 21 to 16% and 2 patients showed no change in DGR(Table I).

Three of the 7 preoperative refluxers had attended out patients department with recurrent gastritis like picture and bilious vomiting.

The amount and pattern of gastric activity in patients judged to be positive for DGR preoperatively was quite distinct from the amount of back ground activity counted in a comparable left upper quadrant area of the abdominal field in negative studies.

Seven patients with an insignificant reflux preoperatively

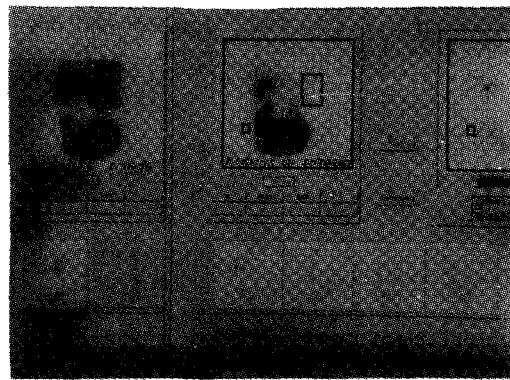


Fig. 1

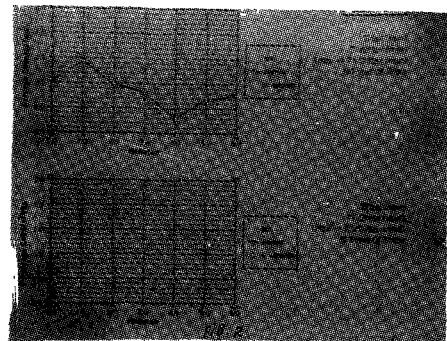


Fig. 2

had an enhanced postoperative reflux (>14%). On statistical analysis this increase was found to be significant at p<.01 (paired 't' test). Overall 14 patients had significant DGR postoperatively(Table I).

Table II

Group	No. of Refluxers	Peak gastric activity Mean (Range)	Time of peak gastric activity mean (range)
Patients of cholelithiasis	7	21.4(15-30)	24.5(00-6.0)
Cholecystectomised patients	14	22.7(16-38)	26.17(00-60)

Based on the above results, it can be established that the number of refluxers i.e., those having significant reflux (DGR) increased post cholecystectomy. 7(23.33%) patients who did not show significant (p<.01) preoperative DGR developed post cholecystectomy reflux. Five from this group of 7 patients presented postoperatively with the clinical picture of bile gastritis. Main complaint of these patients was burning epigastric pain and 2 patients developed bilious vomiting denovo.

The mean of individual peak gastric activity and the mean of time of individual peak gastric activity in patients with significant DGR preoperatively and those having

significant DGR postoperatively showed more or less matching pattern (Table II).

DISCUSSION

Cholecystectomy though an accepted treatment for patients who are believed to have symptoms due to gall stones has also been under focus as a critical factor in causation of postoperative alkaline gastritis as a result of enhanced DGR.

A significant number of patients continue with the symptoms after cholecystectomy and in some, certain symptoms may even increase in intensity or new symptoms may appear postcholecystectomy. Increased DGR is believed to be a major cause of symptoms after cholecystectomy in patients in whom other probable causes have been ruled out. Recent studies have pointed towards enhanced DGR reflux after cholecystectomy¹⁰. The bile flow into the duodenum is unregulated and more continuous after cholecystectomy.

A syndrome has emerged in which the constant features are upper abdominal pain usually burning in nature and aggravated by eating and gastroscopic evidence of superficial gastritis confirmed by biopsy. Associated features are nausea, bilious vomiting etc.

Gastric mucosal injury with resultant symptoms could be attributed to any one or a combination of the following possibilities^{13,14}.

1. Enhanced DG reflux due to loss of gall bladder reservoir function.
2. Enhanced DG reflux due to pyloric incompetence after cholecystectomy
3. Postoperative change in the composition of bile with more of unconjugated salts more injurious to gastric mucosa.

From the preoperative symptomatology, nausea, vomiting and abdominal pain were observed to be specific to gall stone disease and have a high probability of being cured by surgery whereas symptoms like belching, heart burn, sour eructation and intolerance to fatty food are not. These findings were also observed in other studies¹⁵.

Dyspepsia was not considered specific to gall stones being equally common in patients with or without gall stones, but patients with gall stones and dyspepsia continue to undergo cholecystectomy.

The postcholecystectomy symptoms of patients who had significant DGR did not differ much from patients who did not have a significant DGR. One major difference however, we noted in our study was bilious vomiting present in 6 patients postoperatively. This included 4 patients who had bilious vomiting preoperatively and 2 patients developed it de novo.

Incidence of significant DGR in our study increased from 23.3 percent preoperatively to 46.6 percent postoperatively. Patient symptoms could be attributed to

DGR in four patients preoperatively and in six patients postoperatively. DGR has been implicated in causations of gastritis in other studies also¹⁰. Although postcholecystectomy symptoms can be attributed to DGR in a limited number of patients. It is possible that over a longer period of follow up the number of such patients may increase.

CONCLUSION AND RECOMMENDATIONS

Evaluating patients with gall stones and dyspepsia also for DGR in addition to other investigations before surgery might hold some merit. The refluxers could then have a different management from non-refluxers although surgery for cholelithiasis remains the corner stone of any treatment plan.

Patients with significant DGR may need further evaluation and should be made aware of the possibility of persistent symptoms or appearance of new symptoms after cholecystectomy.

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