

## Postcholecystectomy syndrome after laparoscopic cholecystectomy: A single center experience from Eastern India

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### ABSTRACT

**Introduction:** Postcholecystectomy syndrome (PCS) is a group of gastrointestinal symptoms after laparoscopic cholecystectomy. This is retrospective review of occurrence and factors for PCS in a single center from Eastern India. **Material and Methods:** A total of 200 successive patients postlaparoscopic cholecystectomy were reviewed. Follow-up of cases were made by personal interview and examination either at the hospitals or the residence, information collected from the relatives and by correspondence. **Results:** About 40 developed PCS and were subsequently managed. Females outnumbered males both in total number of cholecystectomy and occurrence of PCS. Most of the patients were <50 years old. 36 patients of the total 40 patients of PCS had calculus. Pain was the most common symptom followed by nausea-vomiting and Jaundice. 9 patients had stone in common bile duct (CBD), while 4 patients had CBD stricture and 3 patients had biliary fistula. 22 patients were managed conservatively, while 18 patients were managed operatively. Relief or cure offered by conservative and operative treatment was found in 32 cases (80%) of the present series. One case (2.5%) of the present series died on conservative treatment, whereas there were two deaths (5%) after surgery. **Conclusions:** PCS is an important post-treatment morbid condition which is often overlooked. Advanced investigative techniques, correct diagnosis and meticulous surgery will certainly bring down this undesired PCS and finally wipe it out completely.

**Key words:** *Calculus, Laparoscopic, Postcholecystectomy syndrome*

In recent decades, laparoscopic cholecystectomy has gained the status of one of the most commonly performed abdominal operations. This is due to the brisk rise in the incidence of calculus disease of the biliary tract. Due to the greater number of laparoscopic cholecystectomy being performed, the number of patients unimproved by the procedure has also increased proportionately. These unimproved patients are said to have postcholecystectomy syndrome (PCS) [1]. These symptoms can represent either the continuation of symptoms thought to be caused by the gallbladder or the development of new symptoms attributed to the gallbladder. PCS also includes the development of the symptoms caused by the removal of the gallbladder [2].

As a matter of fact, the symptoms presented by such patients are not always due to cholecystectomy but may be due to other factors related or unrelated to hepatobiliary tract disorders, thus uninfluenced by removal of gallbladder. Hence, the term postcholecystectomy should be precisely applied only to those post-operative symptoms considered to have originated in the biliary tract.

In 1947, Womack and Crider 1<sup>st</sup> described PCS, defining it as the presence of symptoms after cholecystectomy [3]. These symptoms may actually represent either:

1. The continuation of symptoms that had been interpreted as resulting from pathology of the gallbladder or,

2. The developed of new symptoms that might normally be attributed to the gallbladder.

PCS is also the development of symptoms, such as gastritis and diarrhea, caused by the removal of the gallbladder.

Out of the laparoscopic cholecystectomies, regardless of the state of gallbladder, PCS occurs in 10-20% of the total cases, in 10-15% of calculus cases and 15-40% of non-calculus cases [2]. This is a retrospective review of occurrence and factors for PCS in a single institution from Eastern India in present light of knowledge.

### MATERIALS AND METHODS

Cases after laparoscopic cholecystectomy were collected from Darbhanga Medical College and Hospital. A series of 200 cholecystectomized cases operated over a period of 5 years have studied. Follow-up of cases were made by personal interview and examination either at the hospitals or the residence, information collected from the relatives and by correspondence. Patient details, symptoms, clinical findings, investigations, and laboratory reports were noted. Hemogram, total counts, serum bilirubin, and alkaline phosphatase were noted. Gastric analysis, upper gastrointestinal endoscopy (UGIE), ultrasound findings, intraoperative, and

histological findings were also noted. Informed consent was taken from all the patients. All the data were entered into Microsoft Excel, and further analysis was performed.

## RESULTS

In a study of 200 laparoscopic cholecystectomized cases, 40 cases having PCS were observed. The patient characteristics have been detailed in Table 1. Females outnumbered males both in total number of cholecystectomy and occurrence of PCS. Most of the patients were <50 years old. 22 patients had PCS within 1 year of cholecystectomy.

Surgical findings are summarized in Table 2. 36 patients of the total 40 patients of PCS had calculus. 8 patients had single stone while 28 patients had multiple stones. Pain was the most common symptom followed by Nausea-vomiting and Jaundice (Table 3).

Investigations have been summarized in Table 4. Serum bilirubin (>2 g%) was observed in 22 patients. UGIE was done in 10 patients; ultrasonography (USG) was done in 24 patients while endoscopic retrograde cholangiopancreatography (ERCP) was done in 5 patients. 9 patients had stone in common bile duct (CBD), while 4 patients had CBD stricture and 3 patients had biliary fistula.

Treatment details are summarized in Table 5. 22 patients were managed conservatively, while 18 patients were managed operatively. 9 patients underwent choledocholithotomy for removal of CBD stone. All 3 patients with biliary fistula were explored and repair done. Removal of bands and adhesions were done in 3 patients. Resection anastomosis of CBD was done in 1 patient, and ERCP guided endoscopic sphincterotomy was done in 2 patients.

Relief or cure offered by conservative and operative treatment was found in 32 cases (80%) of the present series. More number of cases (4 cases-10%) were not improved by conservative treatment, whereas only one case (2.5%) did not respond well to surgical interference. Only case (2.5%) of the present series died on conservative treatment, whereas there were 2 deaths (5%) after surgery. The cause of death in these patients was septicemia secondary to cholangitis.

## DISCUSSION

A total of 200 cholecystectomized cases have been observed during the period 2007-2011. In this study, 150 females and 50 males were encountered. However, the syndrome was seen in 40 cases, in which females were 29 (58%) and males 11 (22%). Bodvall (1973) was stated that females' cases were having significantly higher frequency (43.2%) of PCS than males (27.8%) [4]. This study also shows significantly higher frequency in females after laparoscopic cholecystectomy. This higher frequency in females might be explained by the fact that they suffer from cholecystitis in greater frequencies than males and have excessive hormonal changes at childbearing age and menopause.

The symptom-free interval between cholecystectomy and the development of 1<sup>st</sup> symptom has been termed as asymptomatic period. Table 1 shows that the majority of the cases (40%)

**Table 1: Patient characteristics**

Characteristics	Number
Total number of patients	200
Male	50
Female	150
Total no patients with PCS	40
Male	11
Female	29
Age (years)	
<30	10
31-40	13
41-50	10
51-60	05
>60	02
Symptom free interval	
<6 months	16
6 months-1 year	06
1-2 years	10
2-3 years	03
3-4 years	02
>4 years	03

PCS: Postcholecystectomy syndrome

**Table 2: Showing the findings at cholecystectomy in 40 symptomatic cases of this series**

Findings	Number of cases
Gall-bladder	
Condition of wall	
Pathological	18
Normal	22
Presence of stone	
Multiple	28
Single	8
Bile	
Turbid	12
Clear	28
CBD	
Pathological	8
Normal	28
Presence of stone	4
Cystic and hepatic ducts	
Pathological	10
Normal	30
Unhealthy liver	4
Unhealthy pancreas	8
Presence of adhesion	18
Calculus	
Present	36
Absent	4

presented for treatment within 6 months of their cholecystectomy. Murshid opined that most of the symptoms appeared in 65.6% of cases within 1 year while minimum and maximum duration

**Table 3: Showing the major symptoms present before and after laparoscopic cholecystectomy**

Symptoms	Cholecystectomy	
	Before	After
Pain	40	36
Jaundice	28	25
Nausea or vomiting	32	29
Constitutional disturbance	20	22
Indigestion	12	16
Sour belch or heartburn	10	18
Bowel disorder (diarrhea, constipation)	11	21
Fit intolerance	16	20

**Table 4: Showing the results of investigations**

Laboratory investigations	Number
Blood	
Leukocytosis	5
Hemoglobin (<10 g%)	16
ESR (above 20 mm)	4
Liver function test	
Serum Bilirubin (>2 g%)	22
Serum alkaline phosphatase (above 13 K.A. unit)	12
Gastric analysis	
Hyperchlorohydria	06
Hypochlorohydria	02
Normochlohydria	06
UGIE (total)	10
Narrowing of esophagus	1
Duodenal ulcer	2
Gastric ulcer	1
Pyloric stenosis	1
No findings	5
USG (total)	24
Stones in CBD	9
CBD stricture	4
Biliary fistula	3
Pancreatitis	2
Hepatitis	1
Right subhepatic abscess	1
Cirrhosis of liver	1
Liver malignancy	1
Malignancy pancreas	1
Malignancy ampulla of vater	1
ERCP (total)	5
Stenosis of sphincter of Oddi	2
Stones in CBD	2
Stricture of CBD	1

ESR: Erythrocyte sedimentation rate, UGIE: Upper gastrointestinal endoscopy, USG: Ultrasonography, ERCP: Endoscopic retrograde cholangiopancreatography, CBD: Common bile duct

of asymptomatic period varied between 1 month and 9½ years (average being 2 years) [5].

The important clinical features were pain in 90% of cases, jaundice-62%, vomiting (nausea)-73% and constitutional disturbances (fever)-55%. Additional features were indigestion (40%), sour belch (heart burn)-45%, bowel disorder (constipation and diarrhea)-52%, and fat intolerance-50% [3].

Pain was the most common symptom in studied cases. It was observed more commonly in epigastrium (58%) than in the right hypochondrium (42%) and was most commonly (60%) dull aching (mild) in nature than colicky (severe) (40%).

The factor responsible for pain was thought to be gastric hyperacidity through significantly hyperacidity was found only in 6 cases (15%) of the present series. Dull aching pain (mild) in the explored cases was found to be due to associated cholangiohepatitis and pancreatitis. The colicky pain (severe degree) found in 40% of the present series was due to obstruction at the lower end of CBD either by stone or spasm and stenosis of the sphincter of Oddi [6].

Weir and Snell (1935) have analyzed the mechanisms of varieties of lesions giving rise of colic. These attacks of colic included immediate post-operative or convalescent colic, attributable to stone in the CBD, hepatitis, and cholangitis and some were referable to incomplete cholecystectomy or caused by stricture of CBD. Ivy and Sandblom (1934) and Corazziari (2003) have found that after cholecystectomy hyperkinesis of the sphincter of Oddi might persist and become pastic, leading to overdistention of the bile ducts and production of pain [7].

The incidence of jaundice in the present series was in between that observed by Gupta et al. (1969) and Twiss et al. Out of 25 cases stone was found in CBD in 9 cases (36%), whereas Gupta et al. observed stones in 37.5% and Adam in 62.5%. In the remaining 16 cases, the reason for jaundice was stricken of CBD 5 cases (20%) stenosis of sphincter of Oddi 2 cases (8%); choledochal fistula 3 cases (12%) cholangiohepatitis and periampullary malignancies constituting 6 cases (24%) [3].

In the present series, 3 cases (7.5%) had biliary fistula on the right side of the abdomen opening to the exterior through the skin, where the drainage tube was given at the end of the cholecystectomy. Those fistulae started immediately after the drainage tube was removed. All of them had jaundice (plasma bilirubin above 4 mg%) in the post-operative period [8].

About 4 cases (10%) of the present series had stricture of CBD shown by USG and ERCP. In 1 case (2.5%), re-exploration was done and the stricture segment excised with end to end anastomosis of the severed ends.

In the present series, the interval between the 1<sup>st</sup> symptoms and cholecystectomy was variable from 6 months to 10 years.

Filip et al. stated that functional disorders of gastric and intestinal motility, as well as noncorrected residual or arised due to iatrogenic damage the biliary ducts pathology, were the cause of PCS occurrence after laparoscopic cholecystectomy conduction [9].

In the present series injury to CBD, recurrent cholangitis before cholecystectomy, periductal fibrosis due to extravasation

Table 5: Treatment details

Treatment adopted	Number of cases (%)
Conservative	22 (57.5)
Operative	18 (42.5)
Removal of bands and adhesions	3 (7.5)
Cholechololithotomy	9 (22.5)
Resection anastomosis of CBD	1 (2.5)
Endoscopy sphincterotomy	2 (5.0)
Repair biliary fistula	3 (7.5)

CBD: Common bile duct

of infected bile or blood after cholecystectomy are responsible for the stricture.

About 2 cases (5%) of the present series had stenosis of sphincter of Oddi which developed symptoms 1 year after the initial cholecystectomy. The patients had severe pain, fever, and jaundice. Ultimately, transduodenal sphincterotomy was done which was rewarded with cure.

Adhesion between CBD with surrounding structures, namely, duodenum, stomach, liver, and colon has been observed in 3 cases (7.5%) of the present series. Periductal fibrosis plays a complex role in cholecystectomized individuals. This is probably due to leakage of bile and blood causing irritation and inflammation over the surrounding structure due to lack of care during operation by inexperienced surgeon.

Most of the patients are managed conservatively, and surgical intervention is required in of CBD stone, biliary stricture, and biliary fistula [2]. This study has small number of patients in both the approaches and thus was not able to find a difference between the 2 approaches.

## CONCLUSION

PCS is an important post-treatment morbid condition which is often overlooked. Advanced investigative techniques, correct diagnosis as far as practicable and above all mature operative judgment and meticulous surgery will certainly bring down this undesired PCS and finally wipe it out completely.

## REFERENCES

1. Jaunoo SS, Mohandas S, Almond LM. Postcholecystectomy syndrome (PCS). *Int J Surg*. 2010;8(1):15-7.
2. Lum YW, House MG, Hayanga AJ, Schweitzer M. Postcholecystectomy syndrome in the laparoscopic era. *J Laparoendosc Adv Surg Tech A*. 2006;16(5):482-5.
3. Womack NA, Crider RL. The persistence of symptoms following cholecystectomy. *Ann Surg*. 1947;126(1):31-55.
4. Bodvall B. The postcholecystectomy syndromes. *Clin Gastroenterol*. 1973;2(1):103-26.
5. Murshid KR. The postcholecystectomy syndrome: A review. *Saudi J Gastroenterol*. 1996;2(3):124-37.
6. Schofer JM. Biliary causes of postcholecystectomy syndrome. *J Emerg Med*. 2010;39(4):406-10.
7. Gregg JA, Clark G, Barr C, McCartney A, Milano A, Volcjak C. Postcholecystectomy syndrome and its association with ampullary stenosis. *Am J Surg*. 1980;139(3):374-8.
8. Lasson A. The postcholecystectomy syndrome: Diagnostic and therapeutic strategy. *Scand J Gastroenterol*. 1987;22(8):897-902.
9. Filip M, Saftoiu A, Popescu C, Gheonea DI, Iordache S, Sandulescu L, et al. Postcholecystectomy syndrome - An algorithmic approach. *J Gastrointest Liver Dis*. 2009;18(1):67-71.

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