

Epidemiological Profile of Postcholecystectomy Syndrome: An Prospective and Observational Study**Vineeta Kumari¹, Sudhir Kumar², Khursheed Alam³, Sunil Kumar Ranjan⁴, Ashok Kumar⁵**¹Senior Resident, Department of General Surgery, Govt. Medical College and Hospital, Bettiah, West Champaran, Bihar.²Senior Resident, Department of General Surgery, Govt. Medical College and Hospital, Bettiah, West Champaran, Bihar.³Assistant Professor, Department of General Surgery, Govt. Medical College and Hospital, Bettiah, West Champaran, Bihar.⁴Associate Professor and HOD, Department of General Surgery, Govt. Medical College and Hospital, Bettiah, West Champaran, Bihar.⁵Assistant Professor, Department of General Surgery, Govt. Medical College and Hospital, Bettiah, West Champaran, Bihar.

Received: 01-01-2026/Revised: 15-02-2026 / Accepted: 21-03-2026

Corresponding author: Dr.Sudhir Kumar

Conflict of interest: Nil

Abstract**Background:** Over a million cases of cholecystectomy are performed worldwide each year to treat cholelithiasis and cholecystitis. Despite being successful, 10–30% of patients experience post-cholecystectomy syndrome (PCS), which is characterized by jaundice, bloating, diarrhea, upper abdominal pain, or dyspepsia. The goal of this study is to evaluate how surgery affects patients' complaints.**Methods:** From March 2025 to August 2025, this prospective observational study was carried out in the Department of General Surgery, GMCH, Bettiah, West Champaran, Bihar. Standard questionnaires were used to assess 160 patients undergoing cholecystectomy.**Results:** Thirty percent of 160 individuals with gallstone disease who had two or more symptoms prior to surgery developed postcholecystectomy syndrome.**Conclusion:** Based on the results it can be concluded that to provide effective treatments for individuals with PCS, it is essential to take signs seriously, conduct a comprehensive evaluation to reach an accurate diagnosis and treat the underlying cause appropriately.**Keywords:** Cholecystectomy, cholecystitis, Postcholecystectomy Syndrome.**DOI:** 10.25258/ijcpr.18.4.266

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

The surgical removal of the gallbladder, or cholecystectomy, is one of the most frequently carried out procedures in the world. Gallstones and cholecystitis, which cause severe abdominal pain and other consequences, are the main indications for this procedure. Although cholecystectomy usually reduces these symptoms and enhances the patient's quality of life, post-cholecystectomy syndrome (PCS) refers to a variety of new or chronic symptoms that some patients have following surgery. PCS is a significant clinical concern for individuals recovering from gallbladder surgery because its prevalence fluctuates, with studies indicating that up to 5% to 30% of patients may suffer symptoms after surgery. [1]

Abdominal pain, bloating, indigestion, nausea, and occasionally diarrhea are among the symptoms that frequently precede PCS. These symptoms could appear months or years after the procedure, or they could appear soon after. The reason of these symptoms is yet unknown, despite the lack of the gallbladder, which stores bile produced by the liver and distributes it into the small intestine to facilitate digestion. Even though gallstones and other gallbladder disorders are no longer present, bile flow can still be disturbed, and new symptoms could be caused by changes in the gastrointestinal system. Because of this, it is frequently difficult to identify the causes of PCS, which makes diagnosis and therapy problematic. [2]

The basic reasons of PCS have been explained by a number of ideas. One well-known theory is that post-operative symptoms could result from malfunction of the sphincter of Oddi, a muscle valve that regulates the flow of bile and pancreatic juice into the small intestine. Bile can accumulate when this sphincter is unable to release adequately, resulting in pain and other symptoms that resemble those experienced before surgery. Biliary dyskinesia, a disorder in which the gallbladder or bile ducts do not operate at their best following cholecystectomy, is another potential reason. Bile duct damage or even small bowel bacterial overgrowth, which may result from alterations in the gastrointestinal system after gallbladder loss, could be additional explanations. [3]

It is challenging to pinpoint a single underlying etiology for PCS because each patient's clinical presentation might differ significantly. Patients may have normal results on imaging tests, but they frequently report persistent or recurrent stomach pain, bloating, nausea, or changes in bowel habits. In order to diagnose PCS, it is necessary to rule out other possible explanations of the symptoms. Furthermore, because these symptoms are frequently nonspecific, they may coexist with other gastrointestinal disorders such as functional dyspepsia, acid reflux, or irritable bowel syndrome (IBS). Thus, a correct diagnosis requires a thorough evaluation of the patient's symptoms, medical history, and diagnostic testing. [4]

The reported prevalence of PCS varies greatly amongst populations, ranging from as low as 5% to as high as 30%. There could be a number of reasons for this disparity, including variations in patient demographics, surgical methods, and the duration of post-operative follow-up. Furthermore, patients with milder complaints may be included in some research, while others may only take into account patients with severe symptoms. It's also crucial to remember that PCS can be either short-term or long-term; some individuals may only have symptoms right after surgery, while others may have persistent symptoms. [5]

Numerous risk factors have been identified that could make some people more likely to acquire PCS. Patients with PCS are frequently older, female, and have a history of chronic gallbladder disease. It can be difficult to diagnose PCS because it requires ruling out other illnesses that could mirror its symptoms. To rule out problems like bile duct damage or retained stones, common diagnostic procedures like computed tomography (CT) scans, endoscopic retrograde cholangiopancreatography (ERCP), and abdominal ultrasonography are frequently used. Clinicians must rely on clinical judgment and patient-reported symptoms for diagnosis since these tests might not always

identify anomalies. Additional testing, such as motility studies of the duodenum or bile ducts, may be required in certain situations to further explore possible reasons. [6]

Since there is no one-size-fits-all method for treating this complicated illness, PCS treatment options vary greatly. Conservative treatment, such as dietary modifications or medication to control symptoms like discomfort, nausea, or bloating, may be beneficial for some people. Prokinetic medications may occasionally be recommended to enhance gastrointestinal motility, whereas antispasmodic medications or bile acid supplements are frequently used to relieve discomfort. More invasive procedures like endoscopic sphincterotomy or biliary stent implantation may be taken into consideration if conservative treatments don't work. Nevertheless, despite strong interventions, a considerable number of patients continue to experience symptoms, and these therapies are frequently not always successful. [7]

Despite these management techniques, a trial-and-error approach to treatment is frequently used because the precise causes of PCS are not well understood. Thus, more study on the pathogenesis, prevalence, and best practices for treating PCS is necessary. This is particularly true in a tertiary care setting, where it is possible to study a larger and more varied patient population, offering important insights into the prevalence, risk factors, and underlying causes of the disorder. Clinicians may be able to treat patients more precisely if we have a better grasp of PCS. [8, 9]

Materials and Methods

From March 2025 to August 2025, 160 patients of both genders with post-cholecystectomy syndrome from the general surgery department of the Govt. Medical College and Hospital in Bettiah, Bihar, participated in this study. Everyone agreed in writing to take part in the study.

Details such as gender, age, and name were recorded. A full blood count, amylase, lipase, liver function test, and USG of the entire abdomen were all performed. Under general anesthesia, a typical four-port LC was performed on each subject. These patients were tracked for six months after being released, and the surgical details were documented. Only if concerns persisted after a month following surgery were they recorded and investigated during follow-up. After that, statistical analysis was done on the data. A P value of less than 0.05 was deemed significant.

Results

Table 1: Distribution of study population according to age groups

Age groups	No. of cases	Percentage
15-30 years	50	31.25%
31-40 years	42	26.25%
41-50 years	34	21.25%
51-60 years	20	12.50%
Above 60 years	14	8.75%
Total	160	100.0%

According to Table 1, the majority of the subjects were between the ages of 15 and 30 (31.25%), followed by those between the ages of 31 and 40 (26.25%), 41 and 50 (21.25%), 51 and 60 (12.50%), and over 60 (8.75%).

Table 2: Distribution of study population according to sex

Sex	No. of cases	Percentage
Male	28	17.5%
Female	132	82.5%
Total	160	100.0

Table 2 shows that there were 17.5% males and 82.5% females.

Table 3: Distribution of study population according to PCS symptoms in 1st month

1 st month postoperative	No. of cases	Percentage
Asymptomatic	130	81.25%
Bloating	4	2.5%
Burping	2	1.25%
Epigastric pain	14	8.75%
Indigestion	4	2.5%
Loss of appetite	2	1.25%
Nausea and vomiting	4	2.5%

According to Table 3, at the first-month follow-up, 2.5% reported bloating, 1.25% reported burping, 8.75% reported epigastric discomfort, 2.5% reported indigestion, 1.25% reported appetite loss, and 2.5% reported nausea and vomiting.

Table 4: Distribution of study population according to PCS symptoms in 2nd month

2 nd month postoperative	No. of cases	Percentage
Asymptomatic	146	91.25%
Epigastric pain	8	5.0%
Indigestion	4	2.5%
Nausea and vomiting	2	1.25%

Table 4 shows that at 2nd month follow-up, epigastric pain was seen among 5.0%, indigestion among 2.5%, and nausea and vomiting among 1.25%.

Table 5: Distribution of study population according to PCS symptoms in 3rd month

3 rd month postoperative	No. of cases	Percentage
Asymptomatic	152	95.0%
Epigastric pain	2	1.25%
Indigestion	4	2.5%
Nausea and vomiting	2	1.25%

Table 5 at 3rd month follow-up, epigastric pain among 1.25%, indigestion among 2.5%, and nausea and vomiting among 1.25%.

Table 6: Distribution of study population according to PCS symptoms in 4th month

4 th month postoperative	No. of cases	Percentage
Asymptomatic	156	97.5%
Epigastric pain	2	1.25%
Indigestion	2	1.25%

Table 6 shows that at 4th month follow-up, epigastric pain among 1.25% and indigestion among 1.25%.

Table 7: Distribution of study population according to PCS symptoms in 5th month

5 th month postoperative	No. of cases	Percentage
Asymptomatic	158	98.75%
Epigastric pain	2	1.25%
Total	160	100.0

Table 7 shows that at 5th month follow-up, epigastric pain among 2 (1.25%) subject.

Table 8: Distribution of study population according to PCS symptoms in 6th month

6 th month postoperative	No. of cases	Percentage
Asymptomatic	158	98.75%
Epigastric pain	2	1.25%
Total	160	100.0

Table 8 shows that at 6th month follow-up, epigastric pain among 2 (1.25%) subject.

Discussion

Since cholecystectomy surgery is related to a number of physiological changes in the digestive system, including hormonal changes that predominantly influence the upper digestive system, it should not be shocking if symptoms emerge or linger following gallbladder removal.[10] Furthermore, disruption of the cholecysto-sphincter of Oddi reflex results in cholecysto-antral and cholecysto-oesophageal reflux, which has raised the incidence of duodenogastric reflux, gastritis, and gastro-oesophageal reflux, which may be the source of PCS symptoms.[11]

The underlying aetiology of symptoms should be investigated in order to decide the best course of action to alleviate symptoms and to pinpoint the origin of long-term difficulties following LC.[13] The purpose of the current study was to evaluate the prevalence of post-cholecystectomy syndrome at a tertiary care facility.[12] Furthermore, all post-LC symptoms are referred to as "post cholecystectomy syndrome." Because "post cholecystectomy syndrome" might be caused by a number of aetiologies necessitating different therapy, this broad word is insufficient as a diagnostic.

Those in the 15–30 age group made up the majority (31.25%), followed by those in the 31–40 (26.25%), 41–50 (21.25%), 51–60 (12.50%), and over-60 (8.75%) age groups. Of them, 17.5% were men and 82.5% were women. Jaunoo et al. reviewed post-cholecystectomy syndrome (PCS), a wide range of symptoms and findings in people who have had cholecystectomy in the past.[14] These people are rare, however they may show symptoms of jaundice, dyspepsia, or abdominal pain. A number of these issues can result in bile duct injury, biliary leak, biliary fistula, and retained bile duct stones. Late consequences include recurrent stones and bile duct strictures.

At the first-month follow-up, we found that 2.5% had bloating, 1.25% had burping, 8.75% had epigastric discomfort, 2.5% had indigestion, 1.25% had appetite loss, and 2.5% had nausea and vomiting. The prevalence, aetiology, risk factors, and treatment of post-cholecystectomy diarrhea were reviewed by Farahmandfar et al. [15] from previous study reports. There was no discernible gender difference in the 9.1% prevalence of PCD. 65.5% of PCD patients have bile acid malabsorption (BAM), the most significant proposed aetiological cause. Cholestyramine treatment was effective in 92% of PCD patients. 54.5% of patients with preoperative cholegenic diarrhea who had cholecystectomy recovered. 7.9% of patients experienced new-onset constipation following a cholecystectomy. Although 92% of PCD patients responded to cholestyramine therapy, the study found that the prevalence of BAM was only 65.5%. This suggests that cholestyramine therapy may also have a curative effect on other unknown aetiological factors related to bile metabolism.

At the two-month follow-up, we found that 5.0% of patients had epigastric discomfort, 2.5% had indigestion, and 1.25% had nausea and vomiting. At the third-month follow-up, we discovered that 1.25% had epigastric discomfort, 2.5% had indigestion, and 1.25% had nausea and vomiting. At the four-month follow-up, we discovered that 1.25% had indigestion and 1.25% had epigastric pain. At the five-month follow-up, we discovered that two (1.25%) subjects had epigastric pain. At the six-month follow-up, we discovered that two (1.25%) of the subjects had epigastric pain. In order to determine and look into the etiology of post-cholecystectomy symptoms (PCSs), Bansal et al. [16] examined the prevalence of PCSs between open and laparoscopic cholecystectomy. A questionnaire was used to compare the preoperative and postoperative symptoms of 50 patients (37 females) between the ages of 20 and 79 who had open cholecystectomy with those of 50 patients (39

females) between the ages of 16 and 75 who had laparoscopic cholecystectomy. On average, patients were monitored for eleven to twelve months. The prevalence of post-cholecystectomy symptoms following open cholecystectomy and laparoscopic cholecystectomy did not differ statistically significantly (26% v/s 14%, $P = 0.134$).

Conclusion

This study advances our knowledge of PCS and demonstrates the necessity of tailored assessment and focused treatment to lower morbidity and improve quality of life following cholecystectomy.

References

1. Prevalence and determinants of postcholecystectomy syndrome in Nepalese patients following one week of laparoscopic cholecystectomy: a cross-sectional research, Shrestha R, Chayaput P, Wongkongkam K, Chanruangvanich W. *Sci Rep*. 14(1): 4903, Feb. 28, 2024.
2. Ganapath AS, Bashir AM, and Sulfekar MS. A prospective investigation of post-laparoscopic cholecystectomy syndrome. 2017; *Glob J Res Anal*. 6(7):14-6.
3. Patel K, Mangtani JK, Gupta N, and Yadav SK. To examine patients' complaints following cholecystectomy. *J Mahatma Gandhi Univ Med Sci Technol*. 5(3):89, September 2020.
4. An algorithmic approach to postcholecystectomy syndrome by Filip M, Saftoiu A, Popescu C, Gheonea DI, Iordache S, Sandulescu L, et al. *J Liver Gastrointestinal Dis*. 18(1):67–71, March 2009.
5. WT Davis. The occurrence, cause, and management of the post-cholecystectomy syndrome. *Am J Dig Dis*. 14(9):290–4, September 1947.
6. Gupta S, Kumar N. An observational comparison of laparoscopic and open cholecystectomy in elderly patients. *Journal of Surgery Academic*. December 29, 2017; 4(3):68-73.
7. Alatise OI, Akinyemi PA, Owojuyigbe AO, Ojumu TA, Omisore AD, Aderounmu A, Ekinadese A, and Asombang AW. Endoscopic treatment of complications following cholecystectomy at a tertiary medical facility in Nigeria. *BMC Gastroenterology*. October 22, 2024; 24(1):375.
8. Sulfekar MS, Bashir AM, Ganapath AS. Post-laparoscopic cholecystectomy syndrome: a prospective investigation. *The International Journal of Research Analysis*. 2017;6(7):14-6.
9. Patel K, Mangtani JK, Gupta N, Yadav SK; 2017; 6(7):14-6. to examine post-cholecystectomy symptoms in patients. *Mahatma Gandhi University of Medical Sciences and Technology Journal*. 2020 Sep. 5(3):89.
10. Narbutt PG, Mik ML, Galbfach PJ, Košecińska MB, Flont PA, Spsychalski MI, et al. Postcholecystectomy syndrome or gastric complaints? *Pol Merkur Lekarski*. 25(147), 2008:221-5.
11. Jiayi L, Carolyn W, Topazian M, JoAnn HC. Better Postcholecystectomy Predictors of Outcome. *Clinical Gastroenterology Journal, Pain*. 2004, 38(8), 692-6.
12. Horwood J, Akbar F, Davis K, Morgan R. Prospective assessment of a selective cholangiography method for suspected common bile duct stones. *Ann R CollSurg Engl*. 92(3):206-10 (2010).
13. Graves HA Jr, Ballinger JF, Anderson WJ. Appraisal of laparoscopic cholecystectomy. *Ann Surg*. 1991;213(6):655-664.
14. Jaunoo SS, Mohandas S, Almond LM. Postcholecystectomy syndrome (PCS). *Int J Surg* 2010;8:15-7.
15. Farahmandfar MR, Chabok M, Alade M, Bouhelal A, Patel B. Post Cholecystectomy Diarrhoea-A Systematic Review. *Surgical Science*. 2012;3:332-8.
16. Bansal S, Jain S, Daga RN, Vyas KC. Prevalence of Postcholecystectomy Symptoms: Long Term Outcome after Open versus Laparoscopic Cholecystectomy. *World Journal of Surgical Research*. 2014;9.