

Clinical Patterns of Post Cholecystectomy Syndrome Reporting at a Tertiary Care Hospital of Sindh

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ABSTRACT

Objective: Determining the presenting clinical symptoms and etiology in post cholecystectomy syndrome (PCS) reporting at a tertiary care hospital of Sindh.

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted at the Department of Surgery, Suleman Roshan Medical College Hospital, Sindh from January 2020 to October 2021.

Materials and Methods: A sample of 135 was calculated by 'sampling for proportions'. Patients were included according to inclusion criteria with history of cholecystectomy. A pre – structured questionnaire was designed. Sonography and computed tomography (CT) scans were performed. Blood was processed and centrifuged to get sera for laboratory testing. Data was entered in SPSS v19.0 for statistical analysis 95% CI ($P \leq 0.05$).

Results: Most frequent clinical sign was right upper quadrant (RUQ) tenderness in 129 (95.5%), followed by epigastric pain in 97 (71.7%), fever in 73 (54.0%), Jaundice in 19 (14.0%) and abdominal pain in 23 (17.0%). Bile leakage was noted in 27 (20.0%), peritoneal fluid in 19 (14.0%), dilated CBD in 39 (28.7%), recurrent CBD stone in 12 (8.8%), retained CBD stone in 19 (14.1%), Oddi sphincter dysfunctioning in 37 (27.4%) and cystic duct stump (remnant) in 41 (30.3%).

Conclusion: The present study concludes the clinical patterns of post – cholecystectomy syndrome vary amongst patients, are of different etiologies that need specific diagnostic and therapeutic strategies by a multidisciplinary team.

Key Words: Postcholecystectomy syndrome, Choledocholithiasis, Bile leak, CT scan, Sonography

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INTRODUCTION

Gallstone (cholelithiasis) is a common disorder in adult age particularly in the female of fertile age and cholecystectomy is the standard treatment for symptomatic gallstones. Most of patients become symptom free, but still a small number experiences symptoms like biliary colic similar to prior to surgery. Whole set of symptom complex is termed the Postcholecystectomy syndrome (PCS).¹ Post cholecystectomy syndrome was first coined by the Womack and Crider² (1947) as 'the presence of biliary symptoms after surgery as before'. Occurrence of biliary and upper gut symptoms begins from day 2nd to 25 years after surgery.³

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Incidence of 43% in female and 28% in male has been reported.^{3,4} PCS mentions the presence of upper gut symptom after cholecystectomy as before. Symptoms are complained in 5 – 40% of patients after cholecystectomy. Biliary and upper gut symptoms may be transient and or persistent lifelong. Lifelong persistent symptoms occur in approximately 10% cases. Postcholecystectomy syndrome (PCS) occurs because of a number of etiologies, such as secondary to biliary duct injury, biliary stricture, retained biliary duct stone, cystic duct and bile duct remnant, gall bladder remnant, and secondary to dysfunction of the sphincter of Oddi.^{1,5} PCS is commonly presenting within the first three years of surgical procedure. PCS associated pain ascribed to either post – surgical strictures and adhesions or sphincter of Oddi dysfunction. Biliary microlithiasis has also been reported as cause of PCS. Biliary etiology accounts for 50% cases of PCS such as dysmotility, biliary injury, bile duct stone, and choledochocyst. Remaining 50% are ascribed to non – biliary etiology such as functional gut disorders, peptic disorder, gastritis, Oddi sphincter dysfunction, and functional dyspepsia. Postcholecystectomy syndrome (PCS) manifest clinically as epigastric pain, dyspepsia, nausea, emesis, flatulence, indigestion, and anorexia.^{1,5} Pain excites with meal intake. Many PCS patients are suffering from diarrhea beside dyspepsia and pain in

upper abdomen. Chronic diarrhea of PCS is a type of bile acid diarrhea that is treated with bile acid sequestrate therapy.¹ Differential diagnosis of PCS are an overlooked reflux esophagitis, gastritis, acid peptic disorder, pancreatic disorders, irritable bowel syndrome, etc.^{3,4} Biliary tract related pathologies include the; retained biliary stone, duct strictures, biliary leaks, bile duct remnant, gall bladder remnant, cystic duct stump remnant, chronic biloma, papillary stenosis, and dysfunctioning sphincter of Oddi.⁶ Extra biliary etiology of PCS include the gastritis, esophagitis, gastric and duodenal ulcers, gut ischemia, chronic pancreatitis, pancreas divisum, enteritis, diverticulosis, psychiatric disorders, ischemic heart disease, neuroma, intercostal neuritis, and worm infestations.⁷ Imaging of upper abdomen may explore a number of etiologies and include the; computed tomography scans, sonography, endoscopy such as ERCP, MRCP, etc.^{8,9} The imaging techniques have decreased the open surgery explorations.¹⁰ Post cholecystectomy syndrome (PCS), an ailing symptom complex, is frequently encountered after surgery but reporting is meager. The present study was planned to determine the clinical pattern/presentation and etiology of post cholecystectomy syndrome in patients reporting at a tertiary care hospital of Sindh.

MATERIALS AND METHODS

A cross sectional study was planned at the Outpatients Department of Surgery, Suleman Roshan Medical College Hospital, Sindh from January 2020 to October 2021. Patients underwent cholecystectomy in past days and presenting with clinical symptoms was included irrespective of gender and age. Volunteers who gave written consent qualified for inclusion in study protocol. A sample of 135 was aggregated based on calculation by 'sampling for proportions'. Sample size of 135 post cholecystectomy syndrome (PCS) was calculated by 5% type – I e, and 90% power of test as cited previously.¹⁰ Post cholecystectomy syndrome (PCS) was defined as cited.^{1,2} Patients with history of cholecystectomy presenting with upper gut symptoms, pain in epigastrium, nausea, emesis, dyspepsia, indigestion and diarrhea collected from the outpatient department of surgery and medicine. A detailed clinical history was inquired from the volunteer PCS patients. Medical officers were deployed to take a full history. Duration of cholecystectomy, improvement of symptoms after surgery, recurrence of symptoms duration, and nature of symptoms, digestive problems, and diarrhea were noted and entered in a proforma. A pre – structured questionnaire was designed including Biodata and details of symptoms related to PCS. Patients were handled according to the guidelines of 'Helsinki's declaration' for conducting human research strictly abiding by the ethical measures. Ethical issues were handled by the principal researcher.

Confidentiality of Biodata was secured in lockers by the principal investigator. Post cholecystectomy syndrome (PCS) with past history of open or laparoscopic cholecystectomy, complaining of symptoms as before surgery were inquired of details of surgery, symptoms – nature, occurrence and duration. Patients were examined by the consultant surgeon and findings are keenly noted in the proforma. Imaging investigations – sonography and computed tomography (CT) scans were ordered to be performed wherever necessary and findings were noted in clinical proforma. Upper gut endoscopy was performed for peculiar type of PCS where suspicion was for the upper gut disorders. Chronic cases were evaluated over time period and underwent elective surgery wherever essentially required. PCS patients with acute surgical problems such as biliary leaks or sever colic were treated in emergency suits. Written informed consent was taken wherever applicable. In case of any surgical procedure, the legal heirs were informed in detail and in writing about the harm and benefits of intervention. A senior staff nurse was asked to collect the blood samples. Blood was processed and centrifuged to get sera for laboratory testing. A completely filled proforma was typed on a Microsoft Excel Sheet. Data was entered in SPSS v19.0 for statistical analysis. Data variables – continuous and categorical were analyzed by Student's t – test and Chi- square testing. Graphs were generated in Microsoft Excel sheet. Level of statistical significance was taken at 95% CI ($P \leq 0.05$).

RESULTS

Mean (\pm SD) age of participants was 51.3 ± 9.13 years. 25 (18.5%) were male and 110 (81.4%) were female of 135 Postcholecystectomy cases. Female to male ratio was 4.4:1. Demographic data of participants is shown in table – 1. Most frequent clinical sign was right upper quadrant (RUQ) tenderness in 129 (95.5%), followed by epigastric pain in 97 (71.7%), fever in 73 (54.0%), Jaundice in 19 (14.0%) and abdominal pain in 23 (17.0%) as shown in graph – 1. Table – 2 shows the clinical laboratory findings of participants.

Table No.1: Demographic data of participants (n=135)

| | Mean | SD |
|---------------------|-------|------|
| Age (years) | 51.3 | 9.13 |
| Pulse (bpm) | 71.3 | 5.11 |
| Systolic BP (mmHg) | 119.9 | 5.76 |
| Diastolic BP (mmHg) | 78.7 | 6.12 |

H. pylori were positive in 91.1%, and elevated WBC counts in 79.1% cases. Liver function test profile was found deranged in majority of cases (table – 2). Serum amylase was found elevated in 28.7% of cases. Graph – 2 shows the Sonography findings in cases.

Table No.2: Clinical laboratory findings of participants (n=135)

| | No. | % |
|--------------------|-----|------|
| ALT | 63 | 46.6 |
| AST | 51 | 37.7 |
| ALP | 107 | 79.2 |
| LDH | 59 | 43.7 |
| Serum Bilirubin | 71 | 52.5 |
| PT (seconds) | 36 | 26.5 |
| Serum Amylase | 39 | 28.7 |
| WBC (µL) | 107 | 79.1 |
| H. Pylori positive | 123 | 91.1 |

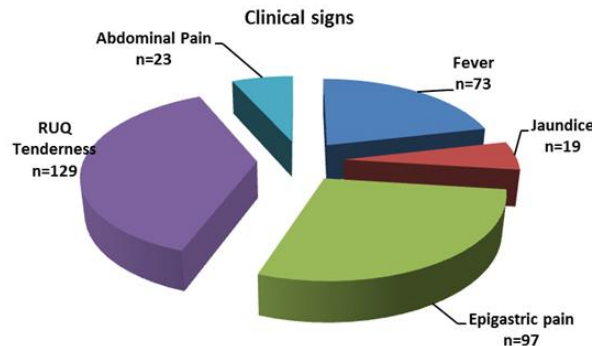


Figure No.1: Frequency of Clinical signs

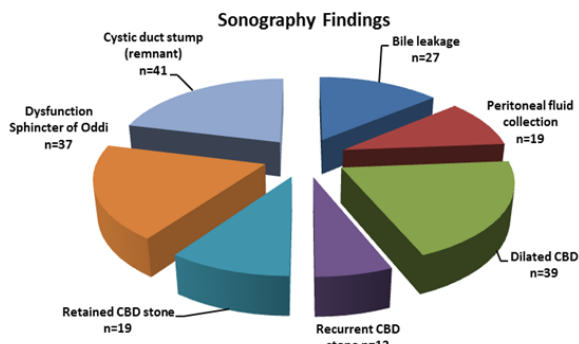


Figure No.2: Frequency of Sonography findings in cases

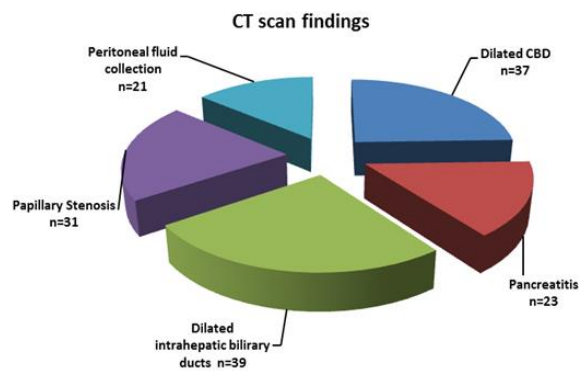


Figure No.3: Frequency of CT scan findings in cases

Bile leakage was noted in 27 (20.0%), peritoneal fluid in 19 (14.0%), dilated CBD in 39 (28.7%), recurrent CBD stone in 12 (8.8%), retained CBD stone in 19 (14.1%), Oddi sphincter dysfunctioning in 37 (27.4%) and cystic duct stump (remnant) in 41 (30.3%). CT

scanning findings are depicted in graph – 3. It shows dilated CBD in 37 (27.3%), pancreatitis in 23 (17.0%), dilated intrahepatic biliary ductile in 39 (28.7%), papillary stenosis in 31 (22.9%) and peritoneal fluid collection in 21 (15.5%).

DISCUSSION

The present prospective cross sectional study determined the clinical patterns, sonography and computed tomography scan findings of PCS reporting at the tertiary care hospital. Mean (± SD) age of participants was 51.3±9.13 years, that agrees to previous studies.^{11,12} Reported average age of gallstone is 4 – 5th, a match finding. Of 135 PCS cases, 25 (18.5%) were male and 110 (81.4%) were female with a male to female ratio was 4.4:1. The findings of present study are also concordant to previous studies.^{13,14} We found most common presenting symptoms were the epigastric pain, digestive problems and upper gut symptoms. In present study, the frequent clinical signs were right upper quadrant (RUQ) tenderness in 129 (95.5%), followed by epigastric pain in 97 (71.7%), fever in 73 (54.0%), jaundice in 19 (14.0%) and abdominal pain in 23 (17.0%). The findings are agreeing with previous studies.¹³⁻¹⁵ In present study H. pylori was detected positive in 91.1%, elevated WBC counts in 79.1% and deranged liver function test most of PCS cases. We found serum amylase was found elevated in 28.7% of cases. Findings are supported by previous studies.¹⁴⁻¹⁶ They have reported similar presenting clinical findings. We are opinion any patient with history of cholecystectomy should be screened thoroughly to detect the underlying cause of clinical symptoms. In present stud, the fever and jaundice were found in 73 (54.0%) and 19 (14.0%) cases respectively. Sonography detected the findings of; bile leakage in 27 (20.0%), peritoneal fluid in 19 (14.0%), dilated CBD in 39 (28.7%), recurrent CBD stone in 12 (8.8%), retained CBD stone in 19 (14.1%), Oddi sphincter dysfunctioning in 37 (27.4%) and cystic duct stump (remnant) in 41 (30.3%). Findings are consistent to previous studies.^{16,17} Present study finds recurrent CBD stone in 12 (8.8%) and retained CBD stone in 19 (14.1%), these are supported by previous studies.¹⁷⁻¹⁹ We found cystic duct remnants in 48 (17.6%) patients that are less compared to a previous study¹⁶ that reported in 41 (30.3%). Cystic duct remnant is commonest etiology of PCS that is consistent to previous studies.¹⁶⁻¹⁸ A previous study¹⁹ reported 17 – 25 % of PCS cases revealed an occluding stone in the cystic duct stump. The present study noted dilated CBD in 37 (27.3%), pancreatitis in 23 (17.0%), dilated intrahepatic biliary ductile in 39 (28.7%), papillary stenosis in 31 (22.9%) and peritoneal fluid collection in 21 (15.5%), the findings are consistent with previous studies.^{12,20,21} The present study notes bile leakage 27 (20.0%) of PCS cases. The findings are supported by

past studies.²⁰⁻²² Biliary leakage occurs by ductile injury, sectioning of biliary ductile, and slipping of clips, ligatures and also caused by electro cauterly thermal injuries. Bile ductile injury manifest clinically as leakage causing peritonitis. Past studies¹⁶⁻¹⁹ reported biliary leakage in 19 (7%) of PCS cases that is incomparable to present study. We found peritoneal fluid collection in approximately 29 (10.7%) in present study that is in accordance to previous studies.^{21,22} In present study, the cystic duct stump (remnant) was found in 41 (30.3%) PCS cases that is inconsistent to a previous study¹⁶ as they found in 48 (17.6%) cases. We found Oddi sphincter dysfunctioning in 37 (27.4%) PCS cases that is also in disagreement with previous studies.²²⁻²⁴ Past studies reported Oddi sphincter dysfunctioning in 9-11% PCS cases.^{24,25} Dysfunctioning Oddi Sphincter occurs due to the abnormal local gut hormones²⁵ due to the imbalance in nerve and hormone stimuli after cholecystectomy.²⁶ In present study, the H. pylori were positive in 91.1% of PCS cases that is comparable to previous studies.^{27,28} However, a previous study¹⁶ reported 15.8% H. pylori that is contrary to present finding. The reason is clear, in our country, the H. pylori positivity rate exceeds 90%.^{27,28} We conclude, the clinical patterns of post cholecystectomy syndrome are quite heterogeneous and this group of patients needs evaluation by multidisciplinary approach.

CONCLUSION

The present study concludes the clinical patterns of post cholecystectomy syndrome vary amongst patients, arise from different etiologies that need specific diagnostic and therapeutic strategies by a multidisciplinary team. Majority of clinical symptoms are caused by coexistent upper gut disorders of biliary and non-biliary etiologies, hence multidisciplinary collaboration is crucial. It is stressed cholecystectomy patients should be investigated thoroughly by imaging techniques for a proper etiology. Future large scale prospective studies should be conducted at country level on this health problem for embodying national guidelines on post cholecystectomy syndrome.

Author's Contribution:

Concept & Design of Study: Faiza Syed
 Drafting: Faiza Syed
 Data Analysis: Faiza Syed
 Revisiting Critically: Faiza Syed
 Final Approval of version: Faiza Syed

Conflict of Interest: The study has no conflict of interest to declare by any author.

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