

Fever after Percutaneous Cholecystostomy Catheter Removal: Gallstone Extrusion Through a Persistent Cholecystostomy Tract

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Abstract

Gallstone extrusion through a persistent percutaneous cholecystostomy tract is an unusual complication following catheter removal. We report a 72-year-old institutionalised male who re-attended the emergency department with three days of fever without abdominal pain, tenderness, leukocytosis, or liver biochemical abnormalities. Six days earlier, a partially dislodged percutaneous cholecystostomy catheter, inserted six months prior for acute gangrenous cholecystitis, was removed after unsuccessful exchange while he remained clinically well. Two days before re-attendance, the catheter site was unremarkable. On re-attendance, catheter site inspection revealed extrusion of gallstone-like material. Computed tomography demonstrated acute-on-chronic cholecystitis with an inflamed tract extending from the gallbladder fundus towards the abdominal wall. Gross examination identified gallstones, and fluoroscopic contrast injection demonstrated communication between the cutaneous tract and gallbladder. A new percutaneous cholecystostomy catheter was advanced through the tract for drainage and source control. Given the prolonged catheterisation, short interval after catheter removal, and fluoroscopic findings, persistence of the mature tract was considered more likely than a new cholecystocutaneous fistula, although the latter could not be excluded. This complication may present predominantly with fever and few localising findings. In patients with limited history, reassessment of the previous procedural site may provide an important diagnostic clue and facilitate timely management.

Keywords: Gallstones, cholecystostomy, cholecystitis, fever, aged, emergency service, hospital

Introduction

Percutaneous cholecystostomy is used as a temporising or definitive treatment for acute cholecystitis in high-risk surgical candidates, but complications include catheter blockage, bile leakage, infection, and dislodgement (1). During prolonged catheterisation, the percutaneous tract generally matures within 3-4 weeks of catheter placement (1). Isolated case reports have described tract-related complications following percutaneous drainage for gallbladder disease, including gallstone migration, impaction or extrusion (2-6), and cholecystocutaneous fistula formation (3-8).

We report a 72-year-old institutionalised male who re-attended the emergency department (ED) six days after removal of the percutaneous cholecystostomy catheter, presenting with fever and few localising features. Gallstones were subsequently found

extruding through a persistent percutaneous cholecystostomy tract.

Case Report

A 72-year-old male had a history of acute gangrenous cholecystitis that was treated with radiology-guided percutaneous cholecystostomy in October 2025. Two months later, he was admitted for acute cholangitis complicated by *Klebsiella* bacteraemia and underwent endoscopic retrograde cholangiopancreatography with sphincterotomy. He received culture-directed antibiotics and was discharged with the percutaneous cholecystostomy catheter *in situ*. At the routine follow-up two months later, the catheter was exchanged. His other medical history included a basal ganglia haemorrhage and schizophrenia. He was minimally communicative, chair-bound, and required assistance with activities of daily living.



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Six days before ED re-attendance, the percutaneous cholecystostomy catheter was found to be partially dislodged during routine outpatient follow-up. Catheter exchange was attempted but unsuccessful. As there was minimal drainage and he remained clinically well without fever, abdominal pain, or significant computed tomography (CT) evidence of biliary complications, the Interventional Radiology and General Surgery teams decided to remove the catheter without further biliary intervention. Granulation tissue at the catheter exit site was treated with silver nitrate, and follow-up was arranged.

Four days after catheter removal, he presented to the ED from his nursing home with one day of reported fever, with temperatures up to 37.9 °C, associated with myalgia and lethargy but without abdominal pain. His temperature in the ED was 37.6 °C, and his other vital signs were normal. The examination revealed a soft, non-tender abdomen. The previous percutaneous cholecystostomy site in the right upper quadrant was documented as unremarkable, without erythema, bleeding, or discharge. White blood cell (WBC) count was $9.18 \times 10^9/L$, total bilirubin was 6 $\mu\text{mol/L}$, alkaline phosphatase (ALP) was 117 U/L, alanine transaminase (ALT) was 16 U/L, and aspartate transaminase (AST) was 22 U/L. Chest radiography, urinalysis, and SARS-CoV-2 antigen testing did not identify an alternative source of infection. As he remained clinically well, he was discharged with a presumed viral illness and advice for the nursing home staff to monitor him for persistent fever or new symptoms.

Two days later, he re-attended the ED with a three-day history of fever and chills and a maximum temperature of 39 °C. No abdominal pain, jaundice, pale stools, or tea-coloured urine were present. He was afebrile in the ED with normal vital signs. Re-examination revealed a soft, non-tender abdomen. Closer inspection of the prior percutaneous cholecystostomy tract in the right upper quadrant revealed material suspicious for gallstones extruding from the wound, with surrounding erythema (Figure 1). WBC count was $7.80 \times 10^9/L$, total bilirubin was 3 $\mu\text{mol/L}$, ALP was 111 U/L, ALT was 17 U/L, and AST was 30U/L. Procalcitonin was 0.11 $\mu\text{g/L}$ (reference range $\leq 0.49 \mu\text{g/L}$), while C-reactive protein (CRP) was elevated at 217 mg/L (reference range $\leq 4.9 \text{ mg/L}$). Blood cultures were obtained, and intravenous piperacillin-tazobactam (4.5 g every 6 hours) was commenced empirically, based on previous blood culture susceptibilities. Repeat chest radiography and urinalysis were unrevealing. CT of the abdomen and pelvis demonstrated acute-on-chronic cholecystitis with an inflamed tract extending from the gallbladder fundus to the superficial right upper anterior abdominal wall, likely related to the prior percutaneous cholecystostomy tract (Figure 2 A-C). There was no dense gallstone, intraductal calculus, biliary ductal dilatation, or large loculated collection.

The working diagnosis was acute-on-chronic cholecystitis with gallstone extrusion through a persistent percutaneous cholecystostomy tract. On gross examination, the extruding material was identified by the General Surgery team as gallstones. No histopathological confirmation was documented. Given his high operative risk, he underwent radiology-guided reinsertion of a percutaneous cholecystostomy catheter two days after admission. The cutaneous opening at the previous catheter site was cannulated, and contrast was injected under fluoroscopic guidance, demonstrating communication between the tract and the gallbladder (Figure 2D). A new catheter was advanced through the tract into the gallbladder for biliary drainage and source control. Purulent material was aspirated, and bile was collected aseptically for aerobic culture.

Blood cultures remained negative, while bile cultures grew *Staphylococcus aureus* and *Proteus mirabilis*. After two days of intravenous piperacillin-tazobactam, antimicrobial therapy was changed, based on bile culture susceptibilities, to intravenous amoxicillin/clavulanate 1.2 g every 6 hours for three days. The cutaneous opening continued to drain small amounts of haemoserous fluid.



Figure 1. Gallstones extruding from the previous percutaneous cholecystostomy catheter site in the right upper quadrant of the abdomen

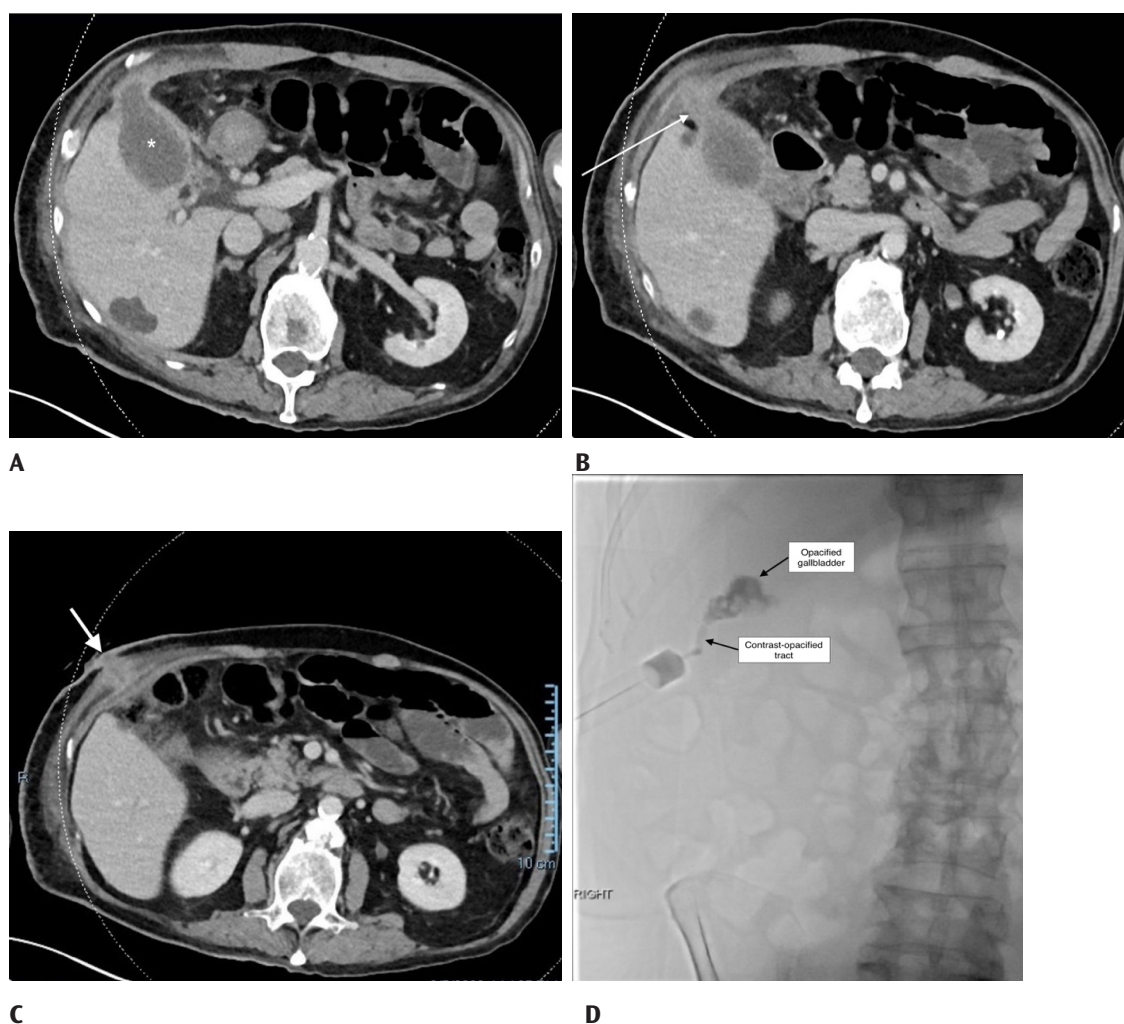


Figure 2. A. An axial contrast-enhanced computed tomography image showing a distended gallbladder (white asterisk) with diffuse mural thickening and pericholecystic fat stranding, consistent with acute-on-chronic cholecystitis. B. An axial contrast-enhanced computed tomography image demonstrating the proximal portion of an inflamed tract extending from the gallbladder fundus towards the right upper anterior abdominal wall (thin white arrow). C. An axial contrast-enhanced computed tomography image showing the distal portion of the tract extending to the superficial right upper anterior abdominal wall at the previous percutaneous cholecystostomy catheter site (thick white arrow). D. A fluoroscopic image obtained during percutaneous cholecystostomy catheter reinsertion following cannulation of the cutaneous opening at the previous catheter site and contrast injection. The labelled contrast-opacified tract communicates with the opacified gallbladder

Three days after the procedure, he had clinically improved and was afebrile, with CRP having decreased to 101 mg/L. He was discharged the following day with the catheter *in situ* and oral amoxicillin/clavulanate 875/125 mg twice daily for four days to complete a seven-day course of amoxicillin/clavulanate. At one- and three-month follow-up visits, he remained well without recurrent fever or cholecystitis. The catheter remained functional with scheduled exchanges every three months. The long-term status of the separate cutaneous opening was not specifically documented.

Discussion

Previous reports of gallstone migration, impaction, or extrusion through prior percutaneous drainage tracts for gallbladder disease, including cases associated with cholecystocutaneous fistulas, have described localising features such as abdominal pain or discomfort (3-5), pain at the previous surgical site (6), and purulent discharge (3-5). In contrast, this patient presented predominantly with fever, without abdominal pain or tenderness. At re-attendance, pain at the previous catheter site

and purulent tract discharge were not specifically documented, and therefore their absence cannot be confirmed. WBC count and liver biochemical tests were normal. The limited documented localising features, together with the absence of leukocytosis or liver biochemical abnormalities, highlight the diagnostic challenge of this complication in the ED.

Recognition was further complicated by the patient's limited ability to provide a reliable history, making symptom-based assessment more challenging. At initial ED attendance, the catheter site was documented as unremarkable, without erythema, bleeding, or discharge. Two days later, however, gallstone extrusion was evident on re-attendance, suggesting interval evolution of the local findings, although an initially subtle abnormality cannot be excluded. This case reinforces the value of repeat examination on ED re-attendance, including inspection of recent procedural sites, when clinically relevant, particularly when history-taking is limited. Clear advice to caregivers to return if persistent fever or changes occur at procedural sites may facilitate earlier reassessment.

The nature of the gallbladder-to-skin tract also warranted consideration. Cholecystocutaneous fistula formation following percutaneous drainage for gallbladder disease has recently been described, including a case in which a drainage catheter for a pericholecystic abscess dislodged after seven days and a fistula became apparent eight months later (8). In contrast, our patient's percutaneous cholecystostomy catheter had remained *in situ* for six months and had been removed only six days before re-attendance. CT demonstrated an inflamed tract extending from the gallbladder fundus towards the abdominal wall; fluoroscopic contrast injection confirmed communication between the cutaneous opening and the gallbladder. These findings could not definitively distinguish persistence of the pre-existing mature cholecystostomy tract from a newly formed cholecystocutaneous fistula. Given the prolonged catheterisation, short interval following catheter removal, and continuity with the previous catheter site, persistence of the mature iatrogenic tract was considered more likely. We therefore describe this finding as gallstone extrusion through a persistent percutaneous cholecystostomy tract, while acknowledging that a newly formed cholecystocutaneous fistula could not be excluded.

An elevated CRP, CT evidence of acute-on-chronic cholecystitis and tract inflammation, a purulent aspirate, and clinical improvement following biliary drainage and antimicrobial therapy supported a probable biliary source for the fever. Normal bilirubin, ALP, and transaminase levels were compatible with gallbladder inflammation in the absence of common bile duct obstruction, consistent with the lack of biliary dilatation or intraductal calculi on CT. Blood cultures remained negative.

Although bile cultures grew *Staphylococcus aureus* and *Proteus mirabilis*, these findings should be interpreted cautiously, given that the sample was obtained after the initiation of antimicrobial therapy and prolonged biliary catheterisation may have resulted in biliary colonisation. Although bedside ultrasonography was not performed, it may identify features of acute cholecystitis such as gallstones, gallbladder wall thickening, and pericholecystic fluid (9), potentially aiding earlier recognition in the ED.

Management should be individualised according to clinical status, operative risk, disease severity, and goals of care. Cholecystectomy may be considered in surgically suitable patients, whereas percutaneous drainage may be appropriate for those at high operative risk (1). Given the patient's high operative risk, definitive surgical management was not pursued. Reinsertion of a percutaneous cholecystostomy catheter through the tract provided biliary drainage and source control. He remained well, without recurrent fever or cholecystitis, during three months of follow-up, with planned three-monthly catheter exchanges.

Conclusion

Gallstone extrusion through a persistent percutaneous cholecystostomy tract may present primarily with fever and minimal localising findings. In patients who re-attend after recent catheter removal, particularly when history-taking is limited, repeat examination and inspection of the previous procedural site may reveal an important diagnostic clue. Early recognition may facilitate appropriate investigation and timely source control.

Ethics

Informed Consent: The patient lacked mental capacity to provide informed consent. Written informed consent for publication of this anonymised case report and accompanying clinical images was obtained from the patient's legal guardian.

Footnotes

Author Contributions

Surgical and Medical Practices: C.Y.L.L., C.Y.T., Concept: S.Y.L., E.O., C.Y.L.L., C.Y.T., Design: S.Y.L., E.O., Data Collection or Processing: S.Y.L., E.O., C.Y.L.L., C.Y.T., Analysis or Interpretation: S.Y.L., E.O., C.Y.L.L., C.Y.T., Literature Search: S.Y.L., E.O., Writing: S.Y.L., E.O., C.Y.L.L., C.Y.T.

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