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Small-Bowel Obstruction Revealing Mirizzi Syndrome: Gallstone Ileus from a Cholecysto-Duodenal Fistula with a 7-Cm Ileal Enterolith in a 76-Year-Old Insulin-Dependent Diabetic

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ABSTRACT

Background: Gallstone ileus is a rare cause of small-bowel obstruction in elderly patients and may result from migration of large gallstones through a bilioenteric fistula. Mirizzi syndrome complicated by cholecysto-enteric fistula (Mirizzi type V) may underlie such presentations and complicate operative planning.

Case presentation: A 76-year-old man with 15 years of insulin-dependent type 2 diabetes presented after 6 days of progressive abdominal distension, obstipation and colicky pain without vomiting or fever. On examination he was hemodynamically stable; the abdomen was distended and tympanitic. Plain abdominal radiography demonstrated multiple small-bowel air-fluid levels. Contrast CT (24/03/2026) showed dilated small bowel with a distal ileal transition at two spontaneously hyperdense endoluminal oval bodies and intrahepatic branching gas (aeroportia); the gallbladder was not visualized. Laboratory tests showed leukocytosis and elevated CRP; creatinine was elevated on admission.

The patient underwent urgent laparotomy. Exploration revealed marked small-bowel dilation with a 7-cm macro-calculus impacted in an ileal loop 4 m from the ligament of Treitz and 60 cm from the ileocecal valve; no macroscopic intestinal ischemia was seen. A cholecysto-duodenal fistula (Mirizzi Vb) with a scleroatrophic gallbladder occluded by greater omentum was identified. **Procedures performed:** enterolith extraction via enterotomy with Heineke–Mikulicz enteroplasty; disconnection of the cholecysto-duodenal fistula; Kehr (T)-tube (Ch12) drainage of the common bile duct; directed Pezzer drainage of the duodenal fistula; mechanical duodenal exclusion and omega Roux (Jordan) gastrojejunostomy; placement of pre- and retro-pedicular drains. No bowel resection was required.

Conclusion: This case illustrates gallstone ileus that revealed Mirizzi syndrome with cholecysto-duodenal fistula. In elderly, comorbid patients a pragmatic combined strategy—rapid obstruction relief, controlled biliary drainage and protection of duodenal repair—can treat both obstructive and biliary pathology while limiting operative risk.

KEYWORDS: Gallstone ileus; Mirizzi syndrome; cholecysto-duodenal fistula; aeroportia; enterolithotomy; Kehr tube

INTRODUCTION

Gallstone ileus is an uncommon mechanical cause of small-bowel obstruction (≈1–4% overall, higher in elderly cohorts) resulting from migration of gallstones into the intestinal lumen through a bilioenteric fistula, most often cholecysto-duodenal. Mirizzi syndrome describes obstruction of the bile ducts from an impacted stone in the cystic duct or infundibulum and may progress to cholecysto-biliary or cholecysto-enteric fistula (Mirizzi type V). The coexistence of Mirizzi Vb (fistula with gallstone ileus) presents a combined surgical challenge: urgent relief of obstruction must be balanced against the need to control biliary contamination and avoid hazardous dissection in an inflamed field. We report a case of gallstone ileus revealing Mirizzi Vb in an elderly insulin-dependent diabetic managed with enterolith extraction, fistula disconnection, external biliary drainage and duodenal diversion.

CASE PRESENTATION

A 76-year-old man with 15 years of insulin-dependent type 2 diabetes presented with 6 days of progressive abdominal distension, complete cessation of flatus and stool, and colicky abdominal pain. He reported no vomiting or fever. On arrival he was conscious and hemodynamically stable (BP 120/60 mmHg, HR 78 bpm, RR 18/min, T 36.6°C). The abdomen was distended and tympanitic; no prior laparotomy scars and hernial orifices were free. Rectal exam returned normal-colored stool.

LABORATORY RESULTS:

Hb 18.8 g/dL, WBC 16,300/µL, platelets 339,000/µL, PT 67%, Na 139 mmol/L, K 4.4 mmol/L, urea 2.94 mmol/L, creatinine 30.6 mg/L (to be verified for units), AST 127 U/L, ALT 53 U/L, CRP 73.6 mg/L, total bilirubin 14.9 µmol/L. Upright abdominal film: multiple small-bowel air-fluid levels. Abdominopelvic CT (24/03/2026): dilated small bowel loops (max 40 mm) with transition in distal ileum at two spontaneously hyperdense oval intraluminal bodies; ultrasound correlation showed hyperechoic oval structures with posterior acoustic shadowing. Intrahepatic branching gas consistent with portal venous gas (aeroportia) was present. No colonic distension, no pneumoperitoneum, no free intraperitoneal fluid; intrahepatic and extrahepatic biliary tracts were not dilated; gallbladder not visualized.

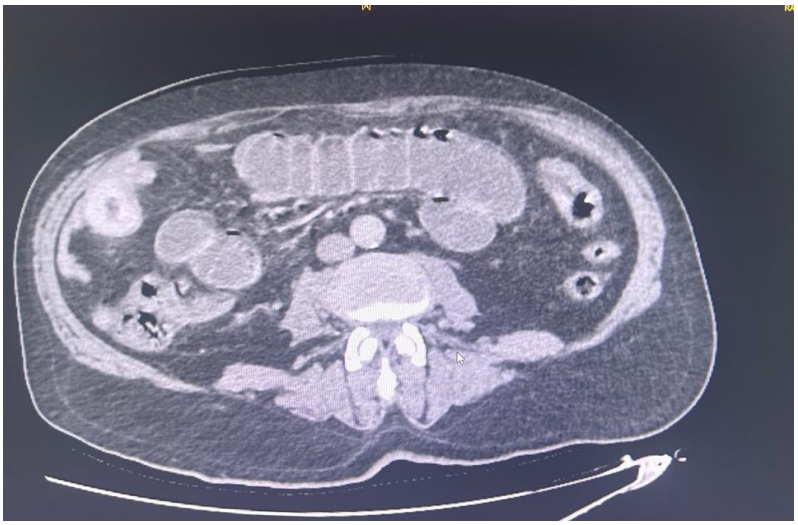

Figure 1. Axial and coronal contrast CT images showing dilated small-bowel loops with transition in distal ileum at hyperdense oval intraluminal bodies (arrows); intrahepatic branching gas consistent with aeroportia is visible (arrowheads).

After resuscitation and nasogastric decompression the patient was taken to the OR for urgent laparotomy. Exploration revealed marked jejuno-ileal distension upstream of a 7-cm macro-calculus impacted in an ileal loop 4 m from the ligament of Treitz and 60 cm from the ileocecal valve. No macroscopic bowel ischemia was noted. A cholecysto-duodenal fistula at D1, sealed by the greater omentum, and a scleroatrophic gallbladder were found—consistent with Mirizzi stage Vb. Procedures: enterotomy and extraction of the 7-cm stone with Heineke–Mikulicz enteroplasty closure; disconnection of the cholecysto-duodenal fistula; CBD drainage with Kehr (T)-tube Ch12; directed Pezzer drainage of the duodenal fistula; mechanical duodenal exclusion and omega Roux (Jordan) gastrojejunostomy; two drains placed pre- and retro-pedicularly. No resection performed.

Figure 2. Intraoperative photograph showing the extracted 7-cm enterolith.

Figure 3.

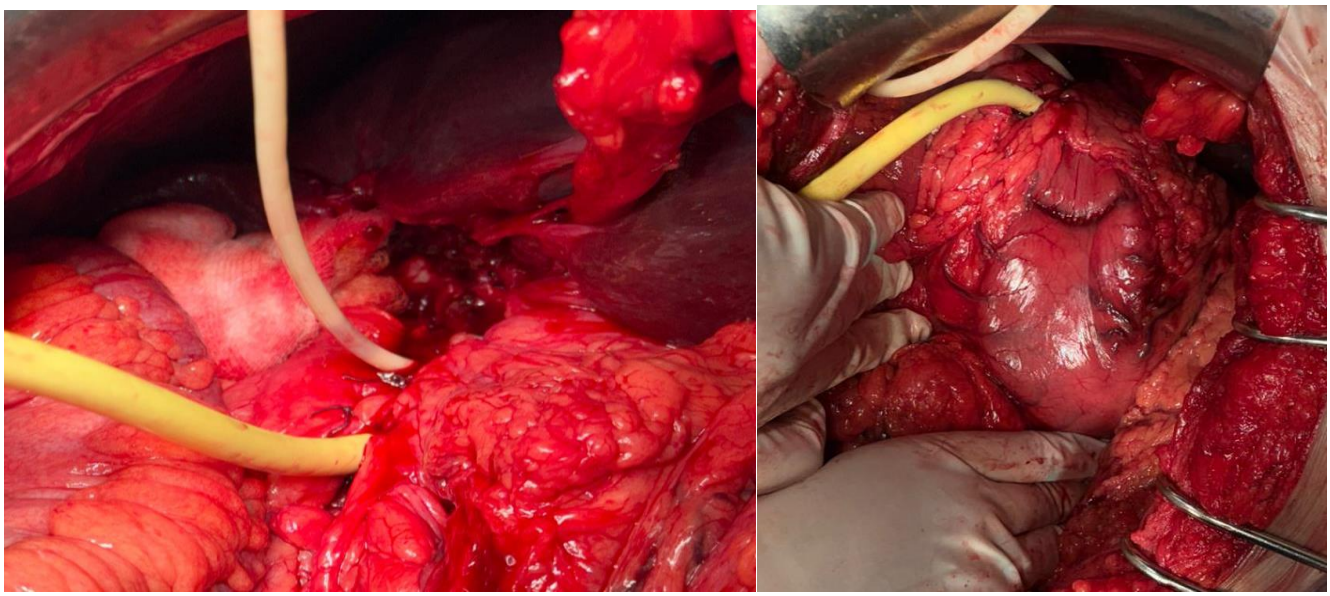

Figure legends

Figure 3 and 4. Schematic intraoperative view: site of enterotomy, location of cholecysto-duodenal fistula (D1), Kehr tube placement and gastrojejunostomy (omega Roux).

DISCUSSION

This case exemplifies Mirizzi syndrome presenting primarily as small-bowel obstruction due to gallstone ileus (Mirizzi Vb). Mirizzi syndrome results from an impacted stone in the gallbladder neck or cystic duct causing extrinsic compression and, with chronic inflammation, erosion into adjacent biliary or enteric structures. Classification systems (McSherry, Csendes, Beltrán) recognize progression to cholecysto-enteric fistula as Mirizzi type V; Vb denotes presence of gallstone ileus.

Diagnosis: CT is the modality of choice, offering high sensitivity for identifying the transition point, ectopic hyperdense stones, pneumobilia/aeroportia and the fistulous anatomy. Rigler's triad (small-bowel obstruction, ectopic gallstone, pneumobilia) guides suspicion, but absence of biliary dilation does not exclude biliary disease—decompression via a fistula may mask upstream dilation, as in our patient. Aeroportia reflects portal venous gas that can be associated with severe mucosal injury or bacterial translocation; however, it may also occur with obstructive stasis without transmural necrosis. Intraoperative assessment of bowel viability is therefore essential.

Surgical strategy: Options include enterolithotomy alone, one-stage definitive repair (enterolithotomy plus cholecystectomy and fistula repair ± biliary reconstruction), or staged management. Enterolithotomy alone minimizes operative time but leaves biliary pathology in situ and carries a small risk of recurrent biliary events; one-stage repair is definitive but carries higher morbidity in

inflamed fields. In elderly, comorbid patients with severe local inflammation (scleroatrophic gallbladder, fistula) a damage-control or combined approach may be preferable. Our chosen strategy combined prompt obstruction relief (enterolithotomy with enteroplasty) with controlled management of biliary contamination: fistula disconnection with external Pezzer drainage, Kehr tube drainage of the CBD to permit postoperative cholangiography and controlled biliary outflow, and duodenal exclusion with omega Roux gastrojejunostomy to protect the duodenal repair and enable early enteral feeding. This balanced definitive and damage-control elements while avoiding prolonged high-risk biliary reconstruction in a frail patient.

Perioperative care should emphasize hemodynamic optimization, strict glycemic control, broad-spectrum antibiotics covering enteric flora, renal monitoring, thromboprophylaxis and early nutritional planning. T-tube cholangiography before removal and close drain surveillance are essential. Definitive biliary reconstruction (e.g., Roux-en-Y hepaticojejunostomy) may be reserved for delayed management if persistent biliary problems occur.

Outcome and prognosis: Mortality for gallstone ileus remains significant in elderly comorbid patients and is related to diagnostic delay, sepsis, bowel ischemia and physiologic reserve. Prompt recognition of combined pathology and tailored operative management aiming to control both obstruction and biliary contamination improves chances of recovery.

CONCLUSION

Acute small-bowel obstruction may unmask Mirizzi syndrome with cholecysto-duodenal fistula and gallstone ileus. In elderly, comorbid patients a pragmatic combined surgical approach—stone extraction, controlled biliary drainage, fistula management and diversion—can resolve obstruction and control biliary contamination while minimizing operative risk.

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