

Barnard syndrome with Rigler triad: a rare cause of bowel obstruction

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A 90-year-old woman (patient 1) was admitted to a surgical department due to abdominalgia, vomiting, and constipation for at least 3 days. Physical examination revealed distended and painful abdomen upon palpation. Abdominal computed tomography (CT) scan showed multiple gas-fluid levels within the small bowel (**FIGURE 1A**), slightly dilated intrahepatic bile ducts with pneumobilia (**FIGURE 1B** and **1C**), and 2 poorly radiopaque gallstones around 27 mm in diameter in the ileum, at the level of the umbilicus and next to the right common ileal artery bifurcation (**FIGURE 1C** and **1D**). The patient underwent emergency laparotomy with enterotomy and evacuation of gallstones. After the surgery, she developed decompensation of chronic heart failure—severe peripheral edema, pulmonary stasis, and dyspnea. Despite intensive pharmacologic treatment, she died 15 days after the operation.

A 75-year-old woman (patient 2), with a history of endoscopic retrograde cholangiopancreatography (ERCP) and biliary stenting 19 months before, was admitted to a surgical department due to abdominalgia, vomiting, and constipation lasting for 2 days. Physical examination showed symptoms of septic shock as well as distended and painful abdomen on palpation. Abdominal CT showed pneumobilia in the right lobe of the liver (**FIGURE 1E**), an ectopic gallstone in the distal ileum (33 mm × 22 mm; **FIGURE 1F**), small bowel obstruction (**FIGURE 1G**), as well as a cholecysto-duodenal fistula and stent in the common bile duct (**FIGURE 1H**). The patient underwent emergency laparotomy with enterolithotomy, rinsing, and drainage. Due to perioperative circulatory insufficiency, she was transferred directly to the intensive care unit, where she remains to date (2 weeks later), with significant improvement.

Bowel obstruction is a common problem in surgical practice, with adhesions, tumors, and

hernias being the common causes. Gallstone ileus is responsible for only 1% to 4% of small bowel obstructions, and presents in just 0.3% to 0.5% of patients with cholelithiasis. A gallstone usually migrates through a cholecysto-duodenal fistula (85%) and causes obstruction in the distal ileum (50%–90%), which is called Barnard syndrome. In 1% to 3% of cases, a gallstone causes gastric outlet obstruction, also referred to as Bouveret syndrome, and in 3% to 25% of cases, it causes large bowel obstruction.^{1–5}

The risk factors for Barnard syndrome include female sex (2.6–4:1 ratio), advanced age (>65 years), and multiple comorbidities, especially long-lasting cholelithiasis, cholecystitis, mechanical jaundice, diabetes mellitus, arterial hypertension, and obesity. An internal biliary fistula may be a result of previously performed ERCP, pancreato-biliary cancer, gastric ulcer, or gastric cancer.^{1–5}

The diagnosis is based on abdominal radiographic imaging, either plain X-ray or CT. Typical symptoms include an ectopic radiopaque gallstone, pneumobilia, and small bowel obstruction, called the Rigler triad. X-ray with oral contrast administration and/or ultrasonography may be helpful if signs of the obstruction are mild and inconclusive.^{1–5}

Small gallstones (<2 cm) are usually eliminated by vomiting or through a natural pathway. If not, management involves laparotomy with enterotomy and stone extraction. Simultaneous cholecystectomy and fistulotomy may be performed to decrease the risk of recurrence and gallbladder cancer (from 15% to 1%, mostly in younger patients), or due to gallbladder gangrene or perforation. Laparoscopy may decrease postoperative mortality and morbidity. Endoscopy may be therapeutic in the cases of gastric, duodenal, ileocecal, or colonic obstruction.^{1–5}

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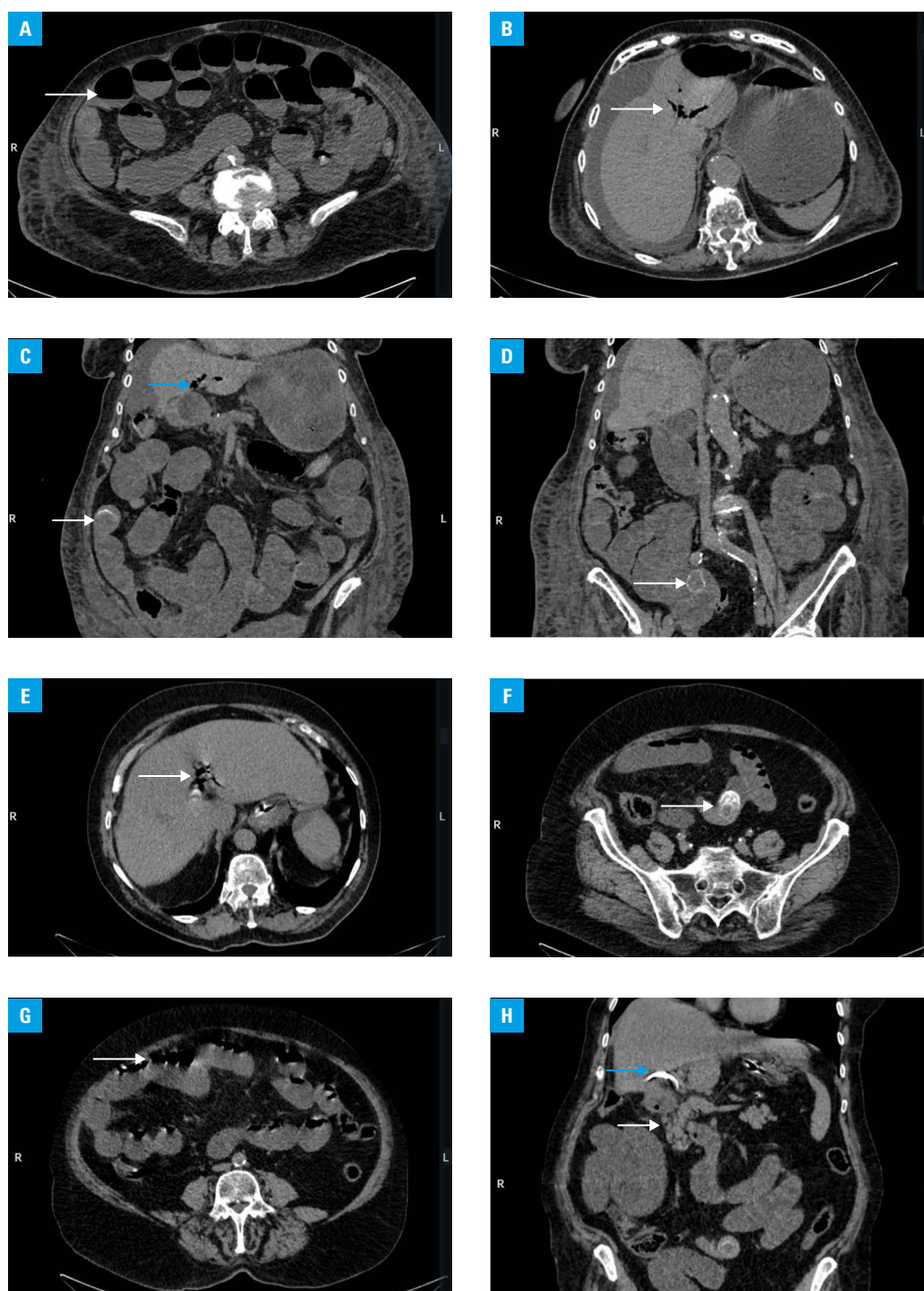


FIGURE 1 Computed tomography findings in 2 women operated due to gallstone ileus; **A–D** – patient 1, 90 years old; multiple gas-fluid levels within the small intestine (**A**, arrow), pneumobilia (**B**, arrow), pneumobilia (blue arrow) and an ectopic gallstone at the level of the umbilicus (white arrow) (**C**), and a second ectopic gallstone close to the right common iliac artery bifurcation (**D**, arrow); **E–H** – patient 2, 75 years old; pneumobilia (**E**, arrow), an ectopic gallstone in the distal ileum (**F**, arrow), gas-fluid levels within the small intestine (**G**, arrow), a cholecysto-duodenal fistula (white arrow), and a stent in the right hepatic duct (blue arrow) (**H**)

To sum up, gallstone ileus should be considered in differential diagnosis of bowel obstruction, particularly in older women with many comorbidities, especially biliary pathologies.

ARTICLE INFORMATION

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