SAS Journal of Surgery
Abbreviated Key Title: SAS J Surg
ISSN 2454-5104
Journal homepage: https://www.saspublishers.com

OPEN ACCESS

General Surgery

Spontaneous Aerobilia Revealed by Intestinal Obstruction: A Case Report

Majd Abdessamad[1*], Benzidane Kamal[1], Zalarh Fadoua[1], Ettaoussi Abdelhak[1], Kamal Khadija[1], Bouali Mounir[1], Elbakouri Abdelillah[1], Khaleq Khalid[1], El Hattabi Khalid[1]

[1]Department of General Surgery, Ibn Rochd Hospital, Hassan II University, Faculty of Medicine and Pharmacy, Tarik Ibn Ziad Street, Morocco

DOI: https://doi.org/10.36347/sasjs.2025.v11i08.011 | **Received:** 14.06.2025 | **Accepted:** 18.08.2025 | **Published:** 26.08.2025

***Corresponding author:** Majd Abdessamad
Department of General Surgery, Ibn Rochd Hospital, Hassan II University, Faculty of Medicine and Pharmacy, Tarik Ibn Ziad Street, Morocco

Abstract | **Case Report**

Aerobilia, defined as the presence of air within the biliary tract, is most commonly observed following surgical or endoscopic procedures. However, its spontaneous occurrence in the absence of biliary manipulation is rare and may indicate an underlying pathological condition. We report the case of a 64-year-old male in whom aerobilia was incidentally discovered on an abdominal CT performed in the setting of acute intestinal obstruction.

Keywords: Aerobilia, spontaneous pneumobilia, intestinal obstruction, sphincter of Oddi dysfunction.

INTRODUCTION

Aerobilia refers to the presence of air in the biliary system. It is typically seen following procedures such as biliary-enteric anastomosis, percutaneous transhepatic cholangiography (PTC), or endoscopic retrograde cholangiopancreatography (ERCP) [1].

When identified in the absence of prior interventions, it may suggest the presence of a bilio-digestive fistula, abscess, or infection. Infectious causes include emphysematous cholecystitis and pyogenic cholangitis [2]. More uncommonly, aerobilia has been described in the setting of significant intestinal obstruction [3]. We present a rare case of spontaneous aerobilia in a patient with no prior biliary intervention, diagnosed during an acute small bowel obstruction.

CASE PRESENTATION

A 64-year-old male with a history of transurethral resection of the prostate for prostate cancer in 2021, followed by hormonal therapy, was admitted for signs of bowel obstruction. The patient presented with cessation of flatus and stools, vomiting, and diffuse abdominal pain. There was no jaundice, clinical cholestasis, or Murphy's sign.

On physical examination, the abdomen was distended and tympanic, and a digital rectal examination revealed an empty rectal ampulla. Plain abdominal radiography showed small bowel air-fluid levels. A thoraco-abdomino-pelvic CT scan revealed a mechanical small bowel obstruction with a transition zone in the right flank and early signs of bowel compromise (Figures 1–2).

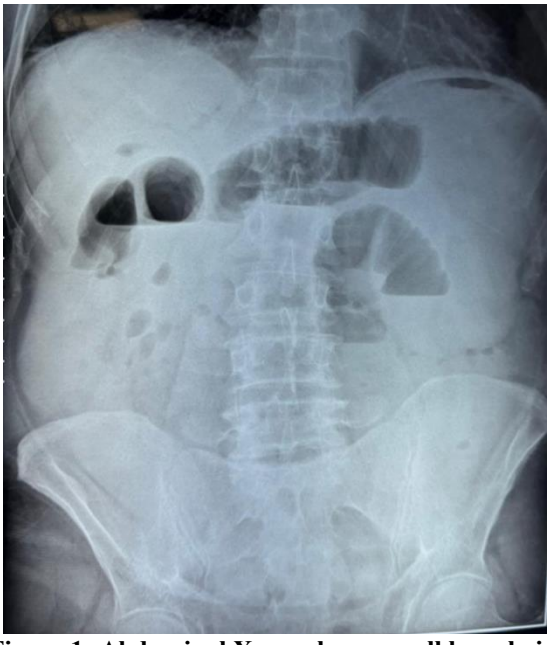

Figure 1: Abdominal X-ray shows small bowel air-fluid levels

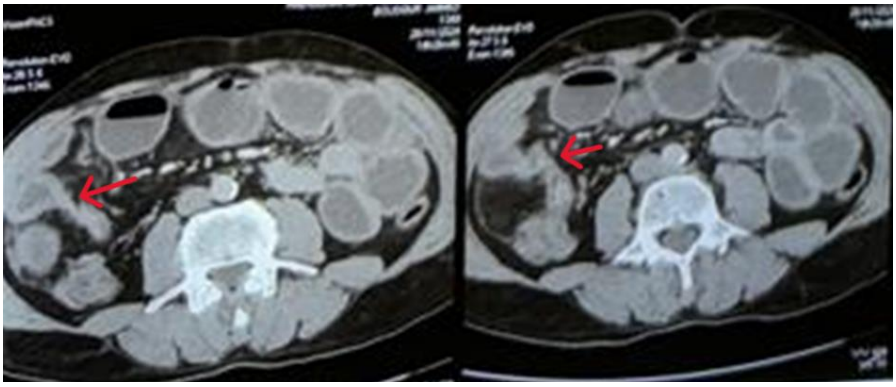

Figure 2: CT appearance of small bowel distension upstream of a transition point (red arrow)

Additionally, diffuse intrahepatic aerobilia was observed in the biliary tree hydroaeric level within the gallbladder (Figure 3).

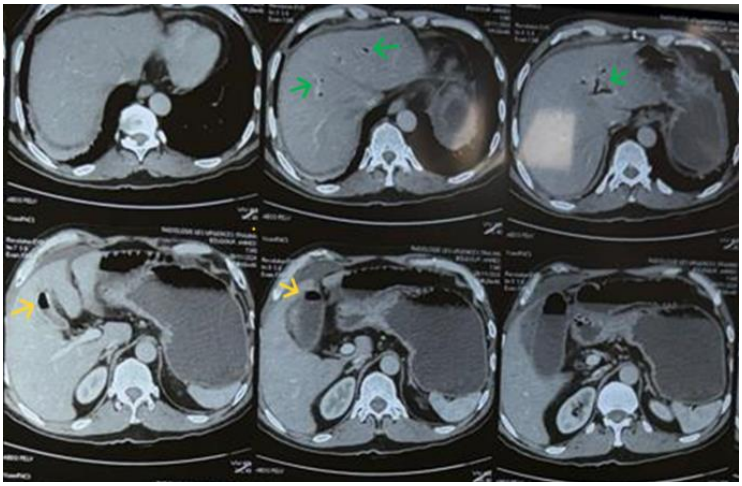

Figure 3: CT image showing aerobilia involving the intrahepatic bile ducts (green arrow), associated with an air-fluid level within the gallbladder (yellow arrow)

The patient was admitted to the operating room. Exploratory laparotomy revealed a small amount of clear peritoneal fluid and a small bowel-mesenteric adhesion it was located 280 cm from the duodenojejunal flexure and 60 cm from the ileocecal valve, causing upstream bowel distension. The adhesion was safely divided. Uncomplicated Meckel's diverticulum found adjacent to the adhesion was resected with enteroplasty (Figures 4–5). The gallbladder appeared thin-walled, non-distended, and no bilio-digestive fistula was detected.

A follow-up side-viewing upper GI endoscopy revealed no abnormalities.

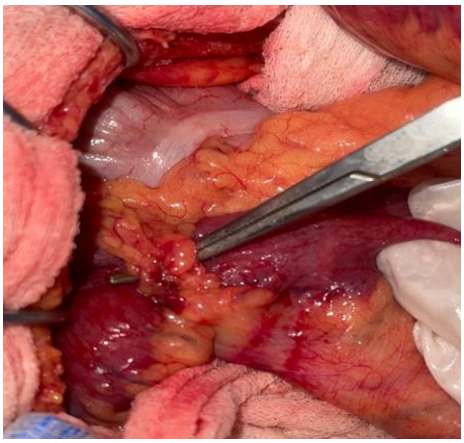

Figure 4: per operative image showing the ileal-mesenteric adhesion

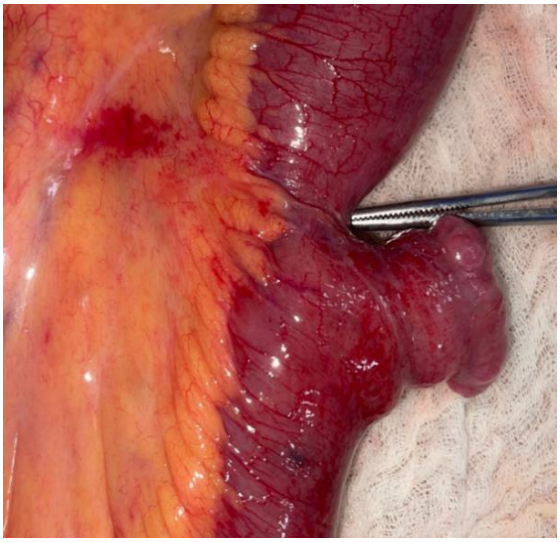

Figure 5: Intraoperative image showing an uncomplicated Meckel's diverticulum.

Discussion

Spontaneous pneumobilia is a rare finding, defined as air within the biliary tree in the absence of prior instrumentation. It typically results from an abnormal communication between the biliary tract and the gastrointestinal lumen, although other mechanisms such as sphincter of Oddi incompetence have been proposed [6].

The presumed pathophysiology involves retrograde migration of intraluminal air from the intestine into the biliary tree via the sphincter of Oddi, facilitated by increased intra-abdominal pressure, as may occur during intestinal obstruction [7].

Although abdominal radiographs can detect aerobilia, CT remains the gold standard for accurate diagnosis [8,9]. In our patient, CT imaging not only confirmed the intestinal obstruction but also revealed diffuse intrahepatic biliary air.

Benign causes of pneumobilia include post-cholecystectomy states, ERCP, and percutaneous transhepatic cholangiography. These usually resolve spontaneously within weeks or months, except in cases of sphincter of Oddi dysfunction, which may lead to persistent pneumobilia, as observed in our patient. He had no history of biliary surgery or infection, supporting a non-iatrogenic and non-infectious etiology.

Conclusion

Spontaneous aerobilia is a rare but generally benign entity. It may occur without biliary pathology, particularly in the context of acute increases in intra-abdominal pressure such as intestinal obstruction. CT imaging is crucial for diagnosis. Early recognition helps avoid unnecessary interventions and allows for appropriate patient management.

References

1. Yamashita H, Chijiiwa K, Ogawa Y, Kuroki S, Tanaka M. The internal biliary fistula--reappraisal of incidence, type, diagnosis and management of 33 consecutive cases. HPB Surg 1997; 10: 143-147. [CrossRef]
2. Thompson RJ, Irwin T. Pneumobilia following blunt abdominal trauma. Ir J Med Sci 2007; 176: 313-315. [CrossRef]
3. Pneumobilie due à un traumatisme abdominal fermé. Fourneau H, Grandjean C. J Belg Soc Radiol. 2019 ; 103:1. doi : 10.5334/jbsr.1661. [DOI] [Article PMC gratuit] [PubMed] [Google Scholar]
4. Sheikh A E, Ahmed K H, Avula S, et al. (April 14, 2021) Spontaneous Pneumobilia: Not So Benign. Cureus 13(4): e14486. doi:10.7759/cureus.14486
5. Farah A, Abdullah A. (2023). Pneumobilie étendue secondaire à une cause bénigne. Journal de chirurgie clinique et de recherche chirurgicale, BioRes Scientia Publishers. 2(2). DOI: 10.59657/2992-9989.brs.23.010
6. Pneumobilia: benign or life-threatening. Sherman SC, Tran H. J Emerg Med. 2006;30:147–153. doi: 10.1016/j.jemermed.2005.05.016.
7. The development of pneumobilia after blunt trauma: İsmail Okan, Servet Tali, Zeki Özsoy. Ulus Cerrahi Derg 2016; 32: 224-225. DOI: 10.5152/UCD.2015.2782
8. Fatin RP. Trafik kazası sonrası izole pneumobilia: Olgu sunumu. Bozok Med J 2014; 4: 75-77.
9. Syndrome post-cholécystectomie : spectre des signes biliaires à la cholangiopancréatographie par résonance magnétique. Girometti R, Brondani G, Cereser L, Como G, Del Pin M, Bazzocchi M, Zuiani C. Br J Radiol. 2010 ; 83 : 351–361. doi : 10.1259/bjr/99865290. [DOI] [Article PMC gratuit] [PubMed] [Google Scholar]