

Pancreaticoduodenectomy for Pancreatic Adenocarcinoma Mimicking Common Bile Duct Lithiasis: A Report of Two Cases on Management Challenges in a Limited-Resource Setting

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How to cite this paper: Anzoua, K.I., Assouhoun, K.T., Ekra, S.A., Kouamé, K.B., N'Dri, A.B., Bamba, I., Kouakou, B.A., Kouakou, R. and Lebeau, R. (2026) Pancreaticoduodenectomy for Pancreatic Adenocarcinoma Mimicking Common Bile Duct Lithiasis: A Report of Two Cases on Management Challenges in a Limited-Resource Setting. *Surgical Science*, 17, 444-450. <https://doi.org/10.4236/ss.2026.1710041>

Received: September 1, 2026

Accepted: September 27, 2026

Published: September 30, 2026

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Abstract

The differential diagnosis between adenocarcinoma of the pancreatic head and distal common bile duct lithiasis represents a classic clinical trap. In limited-resource settings, the scarcity of advanced imaging modalities frequently exposes clinicians to preoperative diagnostic and triage errors. **Methods:** We report two original clinical observations of patients operated on at the Bouaké Teaching Hospital (Côte d'Ivoire) for suspected distal common bile duct lithiasis, whose surgical strategy was intraoperatively redirected toward a major oncological resection. **Results:** A 42-year-old man and a 35-year-old woman, both with an ECOG performance status of 1, presented with obstructive jaundice. Abdominal ultrasound and CT scan revealed a large, multilithiasic gallbladder with dilatation of the intra- and extrahepatic bile ducts. No stones were visualized in the common bile duct, and no pancreatic mass was detected. The initial diagnosis of distal common bile duct lithiasis was refuted intraoperatively upon discovering an indurated tumor of the pancreatic head. A pancreaticoduodenectomy (Whipple procedure) was successfully performed in both patients after intraoperative confirmation of resectability and prior extensive informed consent. Postoperative courses were complicated by a biochemical leak, according to the International Study Group of Pancreatic Sur-

gery (ISGPS) definition [1], in Case 2, which resolved with conservative management. Histopathological examination confirmed pancreatic adenocarcinoma in both cases (pT2N0M0, R0 for Case 1; pT2N0M0, R0 for Case 2). At the 6-month follow-up, both patients are alive and recurrence-free. **Conclusion:** In the presence of persistent obstructive jaundice without a formally identified lithiasic cause on standard imaging, magnetic resonance cholangiopancreatography (MRCP) is essential to resolve diagnostic uncertainty. Despite an unexpected intraoperative discovery and a limited technical platform, pancreaticoduodenectomy remains feasible in selected cases and offers the only curative option for these often young African patients.

Keywords

Jaundice, Pancreas, Pancreaticoduodenectomy, Whipple

1. Introduction

Adenocarcinoma of the pancreatic head is a malignant digestive tumor characterized by late diagnosis and a dismal prognosis [2]. Globally, the only curative treatment relies on surgical oncological resection, primarily performed via pancreaticoduodenectomy [3] [4]. Clinically, cholestatic jaundice represents the iconic initial symptom of this pathology; however, it shares this clinical presentation with numerous benign pathologies of the periampullary region, primary among which is distal common bile duct lithiasis.

The differential diagnosis between these two entities constitutes a daily challenge for medical and surgical teams. Although abdominal ultrasound and abdominal computed tomography (CT) scans are indispensable first-line examinations, they face technical limitations in detecting small pancreatic masses or in the presence of concomitant gallbladder stones, thereby creating a substantial diagnostic bias [5]. In high-income countries, this diagnostic uncertainty is systematically resolved by resorting to magnetic resonance cholangiopancreatography (MRCP) or endoscopic ultrasound (EUS) [6].

In sub-Saharan Africa, and particularly in resource-limited contexts like ours, access to these second-line imaging technologies remains severely restricted. This shortage within the technical platform exposes clinicians to preoperative triage errors, frequently transforming a procedure initially scheduled for a benign biliary pathology into an unplanned major oncological resection. Moreover, the worrisome emergence of these malignant tumors in increasingly younger African patients challenges the traditional epidemiological paradigm and further complicates the initial clinical orientation.

The objective of this study was to report two original clinical observations of pancreaticoduodenectomy performed at the Bouaké Teaching Hospital for tumors of the pancreatic head that initially mimicked distal common bile duct lithiasis. Through these cases, we discuss the diagnostic difficulties, intraoperative

therapeutic dilemmas, and surgical specificities in constrained environments.

2. Clinical Observations

2.1. Case 1

A 42-year-old patient, with no notable medical history, presented with progressive cholestatic jaundice of approximately three weeks' duration. The initial physical examination revealed a patient in good general condition, with an ECOG performance status of 1, presenting with frank mucocutaneous jaundice and excoriations secondary to severe pruritus. Abdominal examination revealed no palpable mass or gallbladder distension.

The preoperative laboratory workup objectified cholestasis with:

- Total bilirubin: 245 $\mu\text{mol/L}$ (Conjugated: 198 $\mu\text{mol/L}$);
- Alkaline phosphatase (ALP): 412 U/L;
- Alanine aminotransferase (ALT): 88 U/L; Aspartate aminotransferase (AST): 74 U/L;
- Prothrombin time (PT): 82% (INR: 1.15).

Abdominal ultrasound and CT scan revealed a large, multilithiasic gallbladder associated with significant dilatation of the intra- and extrahepatic bile ducts. The abdominal CT scan showed no clearly visible stone in the common bile duct, and no focal pancreatic mass was identifiable in the cephalic region. Given this presentation, the diagnosis of distal common bile duct lithiasis was retained.

During the preoperative consent process, the surgical team explicitly discussed with the patient the possibility of an unplanned major oncological resection if an underlying tumor was discovered intraoperatively. The patient provided explicit individual written informed consent for both the initially planned procedure and a potential pancreaticoduodenectomy. Intraoperatively, exploration of the periampullary region refuted the lithiasic hypothesis, revealing an indurated tumor of the pancreatic head measuring approximately 3 cm. Evaluation of vascular involvement showed no invasion of the superior mesenteric vein or the portal vein, and no macroscopic liver metastases or peritoneal dissemination were detected, confirming the resectability of the lesion.

Histopathological examination of the surgical specimen concluded a well-differentiated pancreatic ductal adenocarcinoma (Grade 1), classified as pT2N0M0:

- Total number of lymph nodes examined: 14, all negative (0/14);
- Resection margins: Negative (R0);
- Vascular or perineural invasion: Absent.

2.2. Case 2

A 35-year-old female patient, with no relevant medical history, was admitted for the management of cholestatic jaundice associated with right hypochondrium pain. Upon admission, the patient was in good general health (ECOG 1). Physical examination revealed a large, palpable, and tender gallbladder.

The preoperative laboratory workup showed the following values:

- Total bilirubin: 289 $\mu\text{mol/L}$ (Conjugated: 234 $\mu\text{mol/L}$);
- Alkaline phosphatase (ALP): 534 U/L;
- Alanine aminotransferase (ALT): 105 U/L; Aspartate aminotransferase (AST): 92 U/L;
- Prothrombin time (PT): 78% (INR: 1.21) after vitamin K1 supplementation.

Abdominal ultrasound and CT scan showed a large, multilithiasic gallbladder and dilatation of the intra- and extrahepatic bile ducts. No stone was visualized in the common bile duct, and the pancreatic parenchyma appeared morphologically normal.

As in Case 1, comprehensive individual written informed consent for an unplanned major oncological resection was obtained preoperatively. Intraoperative exploration revealed a suspicious, firm mass in the pancreatic head measuring 2.5 cm. Resectability was confirmed after evaluating the major retroperitoneal vessels (superior mesenteric artery and vein, portal vein), which were free of tumor involvement, and after ruling out distant hepatic or peritoneal metastases.

The postoperative course was complicated on the third postoperative day (POD 3) by a biochemical leak according to the terminology of the International Study Group of Pancreatic Surgery (ISGPS) (persistently elevated amylase level in the drain fluid, greater than three times the upper limit of normal for serum amylase, without clinical deterioration) [1].

This complication had minimal clinical consequences. It was successfully managed with conservative medical treatment while maintaining abdominal drainage. The drain was safely removed on POD 12 after normalization of amylase levels. The patient was discharged in stable condition on POD 15.

Histopathological analysis confirmed a moderately differentiated pancreatic ductal adenocarcinoma (Grade 2):

- Final stage: pT2N0M0;
- Total number of lymph nodes examined: 12, all negative (0/12);
- Resection margins: Negative (R0);
- Vascular or perineural invasion: Perineural invasion present, vascular invasion absent.

Postoperative follow-up and oncological outcome

Following surgery, both patients were referred to the medical oncology department for adjuvant evaluation. Due to local supply constraints and common financial limitations in our context, a standard gemcitabine-based adjuvant chemotherapy regimen could only be initiated at the 8th postoperative week for both patients.

At the 6-month postoperative follow-up, clinical examination, liver function tests, and follow-up abdominal CT scans showed no signs of local recurrence or distant metastasis for either patient. Both patients are still alive and are currently continuing their oncological follow-up.

3. Discussion

The differential diagnosis between adenocarcinoma of the pancreatic head and

distal common bile duct lithiasis represents a classic but highly misleading clinical and imaging trap. In our series, the initial clinical presentation combined with the ultrasound and CT findings of cholelithiasis induced an anchoring bias in favor of a purely benign origin.

The presence of stones at the biliopancreatic junction can create acoustic shadows or inflammatory changes that mask the development of a small adjacent tumor on ultrasound, a modality whose sensitivity for pancreatic head lesions smaller than 2 cm does not exceed 50% to 60% [7].

The main diagnostic obstacle stems from the limited availability of second-line examinations. When standard imaging leaves doubt regarding common bile duct obstruction, international guidelines advocate the systematic use of MRCP or EUS [8]. However, in our practice environment at the Bouaké Teaching Hospital, access to MRI remains hindered by both financial and logistical constraints. The absence of EUS equipment and the prohibitive cost or local unavailability of MRI often force the surgical team to make definitive management decisions based on a cluster of clinical-biological arguments and sometimes suboptimal CT imaging.

This delay or error in preoperative triage exposes the patient to unexpected intraoperative modifications of the therapeutic strategy. To mitigate this risk, a strict preoperative consent process covering unexpected tumor resections is essential.

Regarding postoperative outcomes, Case 2 developed a biochemical leak as defined by the ISGPS. Biochemical leak (formerly Grade A postoperative pancreatic fistula) is widely recognized in the literature as the true “Achilles’ heel” of pancreaticoduodenectomy. Its global incidence varies from 15% to more than 30% depending on surgical series and ISGPS criteria [1]. The main documented risk factors include a soft pancreatic parenchyma texture (frequently encountered in the absence of major underlying obstructive chronic pancreatitis) and a small diameter of the main pancreatic duct (Wirsung) (<3 mm) [9]. Fortunately, biochemical leaks do not require major changes in clinical management apart from the temporary maintenance of drains.

The exceptionally young age of our patients (42 and 35 years) was a striking feature of these two observations. In Western countries, pancreatic adenocarcinoma occurs mainly during the seventh decade of life [10] [11]. However, our findings align with emerging African data highlighting the rising incidence of aggressive pancreatic tumors in young adults under 45 years of age [12].

4. Conclusions

The differential diagnosis between adenocarcinoma of the pancreatic head and distal common bile duct lithiasis remains a major medico-surgical challenge. In resource-limited environments, the frequent coexistence of cholelithiasis can induce a radiological confirmation bias and mask an early-stage underlying pancreatic neoplasia.

Our two observations reiterate the paramount importance of second-line imaging, foremost among which are MRCP or endoscopic ultrasound [8]. Although

the discovery of these tumors was unexpected and intraoperative, performing a pancreaticoduodenectomy offered a crucial chance for curative treatment to these particularly young patients. While two successful resections provide limited evidence to claim broad epidemiological feasibility, these cases demonstrate that advanced pancreatic surgery can be successfully performed with positive short-term outcomes in carefully selected patients within constrained surgical environments.

Ethical Approval

In accordance with the local institutional policy of the Bouaké Teaching Hospital, formal institutional review board approval was waived for this retrospective report of two cases, as it did not involve experimental protocols or deviations from standard clinical care.

Guideline Compliance

This case report was prepared and drafted in strict accordance with the CARE (CAse REport) guidelines.

Informed Consent

Written informed consent was obtained individually from each patient for the publication of this case report and any accompanying images.

Author Contributions

Study concept: Anzoua Kouakou Ibrahim, Assohoun Krahbouet Toussaint; Data collection: Ekra Serge Amos, Kouakou Rosemonde; Supervision and revision of the work: all authors. All authors have read and approved the published version of the manuscript.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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