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Duodenal Duplication Cyst Resection Complicated by Biliary Stenosis: A Case for Choledochoduodenostomy as a Salvage Procedure in a Neonate

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Case Report

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Abstract

Background: Duodenal duplication cysts (DDC) are rare congenital lesions that pose a significant surgical challenge due to their proximity to the pancreaticobiliary system. In neonates, they often present with bilious vomiting, mimicking a surgical emergency like malrotation. Complete surgical excision is the standard treatment, but the complex anatomy creates a risk for iatrogenic injury. This case is reported to highlight this critical risk and to demonstrate the efficacy of choledochoduodenostomy as a definitive salvage procedure for a complete distal biliary stricture in a young infant.

Case presentation: A full-term female neonate presented on day 11 of life with bilious vomiting. After imaging ruled out malrotation but revealed a complex cystic mass, an exploratory laparotomy was performed. A non-communicating DDC attached to the second part of the duodenum was completely resected. Initial recovery was uneventful, but the infant represented at two months of age with progressive obstructive jaundice. Re-exploration revealed a complete fibrous obstruction at the ampulla of Vater, presumed iatrogenic. A side-to-side choledochoduodenostomy was successfully performed. The patient's jaundice resolved, liver function tests normalized, and she was discharged in good condition.

Conclusions: This case underscores that surgical management of DDCs must prioritize the intraoperative identification and protection of the biliary anatomy to prevent secondary injury. In the event of an iatrogenic distal biliary stricture, a choledochoduodenostomy is a reliable and definitive surgical option, achieving excellent outcomes even in a neonate.

Highlights

-Diagnostic Challenge: Duodenal duplication cysts (DDCs) in neonates often present with bilious vomiting, mimicking malrotation and limiting time for detailed preoperative biliary imaging.

-Surgical Pitfall: Complete resection of a periampullary DDC without formal identification of the biliary anatomy carries a high risk of iatrogenic injury to the ampulla of Vater.

-Key Complication: Delayed onset of progressive obstructive jaundice following DDC resection should raise suspicion for a secondary biliary stricture.

-Definitive Solution: A side-to-side choledochoduodenostomy is a safe, effective, and durable salvage procedure for distal common bile duct obstruction, even in young infants, provided the duct is adequately dilated.

-Core Message: Intraoperative verification of biliary integrity (via cholangiogram) is paramount during primary DDC resection to prevent complex biliary complications.

Introduction

Duodenal duplication cysts (DDCs), first described by Calder in 1733, are rare congenital malformations representing less than 5% of all alimentary tract duplications [1, 2]. While the ileum is the most common site, DDCs arise from the foregut and are typically located along the first or second part of the duodenum, often non-communicating with the native lumen [1, 3]. Their proximity to the porta hepatis and pancreaticobiliary tree makes them anatomically treacherous, sometimes leading to diagnostic confusion with choledochal cysts or other congenital abnormalities [4, 5].

The clinical presentation is nonspecific. In older children, symptoms may include abdominal pain, pancreatitis, or a palpable mass [2, 6]. However, in neonates, the predominant symptom is bilious vomiting, which urgently raises concern for malrotation with midgut volvulus as a true surgical emergency [7, 8]. Although prenatal diagnosis is increasingly possible, many cases present postnatally with obstructive symptoms [9–12].

Complete surgical resection is the cornerstone of treatment to prevent complications such as ulceration from ectopic gastric mucosa or rare malignant transformation [2, 13, 14]. However, the complex anatomical relationships in the periampullary region pose significant surgical challenges. We present a neonatal case of a DDC where complete resection was complicated by a secondary biliary stricture, ultimately requiring a choledochoduodenostomy as a salvage procedure. This case highlights the critical importance of intraoperative identification of the biliary anatomy and demonstrates the efficacy of biliary bypass in this challenging setting.

Case Presentation

Patient:

A full-term, female infant born on 20 August 2025.

Birth History:

Born via normal spontaneous vaginal delivery with a birth weight of 3.0 kg. Prenatal and immediate postnatal periods were unremarkable.

Initial Presentation (31 August 2025, Day 11 of Life):

Presented with a four-day history of bilious vomiting. Abdominal radiography was unremarkable. Given high clinical suspicion for malrotation with midgut volvulus, an urgent abdominal ultrasound was performed and it demonstrated normal superior mesenteric vessel anatomy but revealed a complex cystic mass. The classic 'double-wall' sign of a duplication cyst was not identified. Differential diagnoses included a mesenteric cyst or a volvulated bowel loop. Due to the unavailability of computed tomography and the ongoing concern for a surgical abdomen, the decision was made to proceed with an exploratory laparotomy.

First Surgical Intervention

First Surgical Intervention
(Exploratory Laparotomy, Day 11 of Life):

Intraoperatively, there was no evidence of malrotation or volvulus. A cystic mass was identified (Fig. 1); the initial impression suggested an ileal origin, but meticulous dissection along its mesentery traced its definitive attachment to the second part of the duodenum. The cyst was non-communicating and shared a common wall with the duodenum. A complete resection (Fig. 2) of the cyst with the involved duodenal segment and primary end-to-end anastomosis (Fig. 3) was performed. The biliary ducts and ampulla of Vater were not formally visualized during the dissection, and neither an intraoperative cholangiogram nor ultrasound was performed.

Histopathology: Confirmed a duodenal duplication cyst measuring 4 x 3.5 x 3 cm, and sections showed a small intestinal duodenal wall composed of mucosa, muscular wall, and little fat tissue. In marked areas, there is flattened mucosa and cystic degeneration without ectopic tissue.

Postoperative Course:

The initial recovery was uneventful, and the infant was discharged on the fifth postoperative day.

Second Presentation (Approximately two weeks postoperatively):

The infant developed a superficial incision infection followed by progressive obstructive jaundice. Evaluation at an outside hospital raised suspicion for biliary atresia.

Investigations in another children hospital:

• 22 October 2025 (Laboratory Profile):

- Hematology: WBC 16.70 ×10⁹/L, Lymphocytes 11.19 ×10⁹/L, Hemoglobin 10.2 g/dL, Hematocrit 31.0%, Platelets 474 ×10⁹/L.
- Liver Function Tests: Marked conjugated hyperbilirubinemia (Total Bilirubin 8.62 mg/dL, Direct 5.80 mg/dL) with elevated liver enzymes (ALT 77 U/L, AST 98 U/L, GGT 337 U/L).
- Infectious Serology: Anti-Rubella IgG was positive (15.3), and all IgM tests (HSV, CMV, Toxoplasmosis, Rubella) were negative.
- Coagulation & Other: PT 13 sec, INR 1.00, PTT 42.1 sec, CRP 2.2 mg/L, TSH 3.36 mIU/L.

• 23 October 2025 (Ultrasound):

Reported normal liver, spleen, pancreas, and kidneys. The gallbladder measured 1.21 x 3.47 cm pre- and post-feeding without change in diameter. The common bile duct (CBD) and intrahepatic ducts were

described as normal without specific diameters.

• 25 October 2025 (HIDA Scan):

Findings included normal hepatic uptake, delayed gallbladder filling, and no evidence of tracer passage into the small intestine within 24 hours, consistent with a complete or near-complete distal biliary obstruction.

Re-admission to our Unit (Two months of Age, ~ 5.4 kg, 28 October 2025):

Physical examination revealed generalized jaundice, acholic (white) stools, and a normal abdomen without palpable masses or organomegaly. Primary reflexes were intact.

28 October 2025 (Laboratory Profile):

Persistent conjugated hyperbilirubinemia (TB 7.7 mg/dL, DB 3.4 mg/dL) and elevated liver enzymes (ALT 74 U/L, AST 85 U/L). Coagulation profile showed mild prolongation (PT 15.6 sec, INR 1.16).

Second Surgical Intervention

(exploratory laparotomy, 29 October 2025):

Given the history of surgery near the ampulla of Vater, a second exploratory laparotomy was performed. Dense adhesions in the right upper quadrant were encountered, and a small bowel injury occurred, requiring primary repair. Intraoperative cholangiography (Fig. 4) via the distended gallbladder revealed contrast flowing toward the liver but not into the duodenum, confirming a complete fibrous stenosis at the level of the ampulla of Vater with marked proximal CBD dilation grossly intraoperatively (Fig. 5). A side-to-side choledochoduodenostomy was performed (Fig. 6), to establish definitive biliary drainage with intraoperative cholangiography confirming a patent anastomosis.

Postoperative Course of Second Surgery:

- 30 October 2025:

Laboratory tests showed CRP elevated to 70 mg/L, worsening hyperbilirubinemia (TB 10.4 mg/dL) and coagulopathy (PT 16.8 sec, INR 1.26). The patient received packed red blood cell transfusions (7 mL/kg/dose) twice daily.

- 1–3 November 2025:

Clinical improvement noted with passage of normal stool and initiation of oral feeding. Drainage output decreased.

- 5 November 2025:

Significant leukocytosis (WBC 26.04 ×10⁹/L), elevated CRP (137 mg/L), (INR 1.45), and hypoalbuminemia (Albumin 2.5 g/dL). Antibiotic coverage was escalated, and albumin transfusions were administered.

- 6–11 November 2025:

Gradual clinical and laboratory improvement. Enteral feeds were well-tolerated and drainage remained minimal.

- 12 November 2025:

The patient was discharged 13 days after the second surgery.

Pathology & Follow-up Investigations:

- 10 November 2025 (Liver biopsy obtained intraoperatively):

Pathology report demonstrated Stage 3 (septal) portal fibrosis, bile stasis, chronic inflammation, and bile duct proliferation, consistent with a pre-cirrhotic stage secondary to prolonged biliary obstruction. No malignancy was identified.

- 17 November 2025:

Laboratory tests showed the following liver enzymes (ALT 69 U/L, AST 80 U/L) and improved albumin (3.9 g/dL).

- 7 December 2025:

Laboratory tests were within normal limits. Bilirubin had normalized (Total 0.79 mg/dL, Direct 0.18 mg/dL).

- 1 January 2026:

The patient remained clinically well with normal bilirubin levels (Total 0.68 mg/dL) and stable hematologic parameters.

- 6 February 2026:

The patient remained clinically well.

Final Diagnosis:

1. Duodenal duplication cyst without ectopic mucosa.
2. Iatrogenic postoperative distal common bile duct stricture.
3. Secondary pre-cirrhotic biliary fibrosis (Stage 3).

Definitive Management:

Initial duodenal duplication cyst resection, followed by choledochoduodenostomy for biliary drainage.

Outcome:

The patient made a full recovery with resolution of jaundice and normalization of liver function tests following the definitive biliary drainage procedure.

Discussion

DDCs arise in an anatomically complex region, and their dangerous proximity to the pancreaticobiliary tree predisposes patients to pancreatitis through several mechanisms. Cyst mobility can cause transient ampullary obstruction, while a large cyst may lead to direct ductal compression. Additionally, the cyst lumen can be a source of obstructive material, such as sludge, viscous secretions, or hemorrhagic debris, which may migrate to cause luminal blockage [1]. The initial presentation of our patient with bilious vomiting is classic and must be urgently distinguished from malrotation, a well-documented diagnostic pitfall [7, 8]. While an upper gastrointestinal contrast series is often the study of choice to rule out malrotation, our initial ultrasound effectively excluded malrotation and revealed a complex cyst, guiding our decision to proceed with exploratory laparotomy.

In general, gastrointestinal duplications are rare congenital malformations with varied presentations depending on site, size, mucosal pattern, and associated complications, most commonly presenting in the first two years of life [3]. Prenatal detection of DDCs is now possible and of significant importance. With improving ultrasonographic sensitivity, DDCs are increasingly identified in utero as right upper quadrant or epigastric cystic masses [9–11]. Antenatal diagnosis allows for parental counseling and prompt postnatal evaluation, thereby potentially averting emergent presentation [9, 10]. In our case, no prenatal diagnosis was made, contributing to the emergent presentation. Most DDCs range from 2.0 to 4.0 cm, making imaging essential for detection. However, false-negative rates remain significant: 23% with ultrasound and 9% with CT or MRI [4, 15]. Sonographic differentiation from duodenal atresia relies on subtle findings such as an inconsistent demonstration of the "double bubble" sign, the absence of polyhydramnios, and the presence of normal distal bowel [16]. In our patient, the classic 'double-wall' sign was absent, and the cyst's complex appearance led to a broad differential diagnosis, consistent with the known limitations of ultrasound [4].

Ultrasound scan, upper gastrointestinal contrast study, CT scan, and magnetic resonance cholangiopancreatography (MRCP) are important tools for optimal preoperative planning to delineate the anatomy and rule out communication with the pancreaticobiliary system [12, 17–19]. Endoscopic ultrasound (EUS) has been demonstrated to be an excellent technique for directly visualizing the duodenal wall layers and adjacent structures, which can be particularly valuable in older children and non-emergent settings [20]. Additionally, performing an intraoperative cystogram can be a valuable

technique to definitively exclude connections between the cyst and the biliary or alimentary tracts [21, 22]. Pacifique and colleagues argued that magnetic resonance imaging (MRI) should be prioritized over computed tomography (CT) due to its comprehensive diagnostic advantages, particularly for identifying pancreatobiliary anatomical variants, a relevant finding in 5–20% of pediatric pancreatitis cases [23]. In our unstable neonate, advanced imaging was not feasible, but the subsequent complication underscores the value of even a simple intraoperative cholangiogram during the initial resection to verify biliary integrity.

Following radiographic studies, the cyst's size, precise location, and anatomical integration with neighboring structures determine the optimal surgical strategy. The management of duplications is complete resection to prevent recurrence, complications from ectopic mucosa, and documented potential for malignant transformation [2, 13, 14]. However, our case illustrates a critical caveat: complete resection must be balanced with meticulous identification of critical structures. The finding of a complete fibrous stenosis at the level of the ampulla so soon after the initial surgery strongly suggests an iatrogenic etiology. The most likely mechanism was unrecognized trauma to the ampulla or its blood supply during the dissection of the cyst's common wall with the duodenum, as the biliary anatomy was not formally visualized. While postoperative inflammation from the duodenal anastomosis could theoretically contribute, an isolated, complete fibrous obstruction at the precise location of the ampulla is far more consistent with direct surgical injury. This technical misstep is the central "lesson learned" from this case.

Although radical surgical resection is the established approach, the procedural hazards posed by the cyst's vicinity to the major duodenal papilla have prompted the exploration of endoscopic management [24]. Techniques such as marsupialization represent a less invasive approach with accelerated recovery, yet their use remains highly selective, often applied when the interface with the pancreaticobiliary tract is poorly defined [17, 24, 25]. Endoscopic marsupialization has been described as a less invasive option for intraluminal cysts in older patients [26, 27, 28], but it was not suitable in our neonatal case due to the patient's size, the extraluminal nature of the cyst, the emergent presentation, and the risk of leaving behind mucosa with malignant potential [14, 29, 30]. For selected cases, laparoscopic resection including techniques such as partial cystectomy with mucosal stripping for extraluminal cysts has been described as a feasible minimally invasive approach [11, 31].

When faced with the complete distal biliary stricture at re-operation, we had to choose a definitive drainage procedure. While Roux-en-Y hepaticojejunostomy is another option for biliary bypass, choledochoduodenostomy was selected due to the significantly dilated common bile duct (CBD) and the favorable local anatomy, which allowed for a tension-free, side-to-side anastomosis. This procedure is technically simpler and faster in a small infant and avoids the potential complications of a Roux limb. The successful outcome, with complete normalization of bilirubin and liver function, confirms that choledochoduodenostomy is a reliable and definitive salvage procedure, even in infancy, provided the CBD is sufficiently dilated. At most recent follow-up (6 February 2026, approximately 5.5 months of age

and 3 months post-choledochoduodenostomy), the patient remained clinically well with normal liver function tests and age-appropriate growth.

Conclusion

DDCs in neonates present a significant diagnostic and therapeutic challenge. Preoperative imaging, while essential, may be inconclusive, often mandating diagnostic laparotomy. This case underscores that surgical management demands meticulous technique, with intraoperative identification of the pancreaticobiliary anatomy being paramount to prevent iatrogenic injury. A delayed presentation of progressive obstructive jaundice following DDC resection should raise immediate suspicion for a secondary biliary stricture. A choledochoduodenostomy proved to be a safe, effective, and definitive salvage procedure in this infant.

Declarations

Ethics approval:

Not applicable.

Consent for publication

Informed consent was obtained from the patient's father for publication of this case report and any accompanying images. A copy of the consent is available for review by the Editor-in-Chief of this journal upon request.

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Authors' contributions

Naser El-Mefleh conceptualized the case report and was a major contributor in writing the manuscript. Mulham Jarjanazi, Hanady Zwaraa and Aya Nakwan assisted with manuscript preparation. Naser El-Mefleh performed the surgical procedures. Naser El-Mefleh contributed to data collection and analysis. All authors read and approved the final manuscript.

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Availability of data and materials

All data generated or analysed during this study are included in this published article.

Competing interests

The authors declare that they have no competing interests.

References

1. Dipasquale V, Barraco P, Faraci S, Balassone V, De Angelis P, Di Matteo FM et al (2020) Duodenal Duplication Cysts in Children: Clinical Features and Current Treatment Choices. Biomed Hub 5(2):152–164. 10.1159/000508489
2. Carachi R, Azmy A (2002) Foregut duplications. Pediatr Surg Int 18(5–6):371–374. 10.1007/s00383-002-0835-y
3. Gupta R, Kumar A, Agrawal L, Bhandari A, Gupta AK, Goyal RB (2023) Gastrointestinal Duplications: A Decade's Experience. J Indian Assoc Pediatr Surg 28(2):128–136. 10.4103/jiaps.jiaps_108_22
4. Chen JJ, Lee HC, Yeung CY, Chan WT, Jiang CB, Sheu JC (2010) Meta-analysis: the clinical features of the duodenal duplication cyst. J Pediatr Surg 45(8):1598–1606. 10.1016/j.jpedsurg.2010.01.010
5. Koffie RM, Lee S, Perez-Atayde A, Mooney DP (2012) Periampullary duodenal duplication cyst masquerading as a choledochocele. Pediatr Surg Int 28(10):1035–1039. 10.1007/s00383-012-3116-4
6. Lavine JE, Harrison M, Heyman MB (1989) Gastrointestinal duplications causing relapsing pancreatitis in children. Gastroenterology 97(6):1556–1558. 10.1016/0016-5085(89)90404-6
7. Pai NG, Prabhu S, Prabhakar P, Kumar V (2020) Duplication cyst with midgut volvulus in a neonate: an unusual presentation. BMJ Case Rep 13(8):e235526. 10.1136/bcr-2020-235526
8. Cauchi JA, Buick RG (2006) Duodenal duplication cyst: beware of the lesser sac collection. Pediatr Surg Int 22(5):456–458. 10.1007/s00383-005-1600-9
9. Borgnon J, Durand C, Gourlaouen D, Sagot P, Sapin E (2003) Antenatal detection of a communicating duodenal duplication. Eur J Pediatr Surg 13(2):130–133. 10.1055/s-2003-39561
10. Foley PT, Sithasanan N, McEwing R, Lipsett J, Ford WD, Furness M (2003) Enteric duplications presenting as antenatally detected abdominal cysts: is delayed resection appropriate? J Pediatr Surg 38(12):1810–1813. 10.1016/j.jpedsurg.2003.08.032
11. Palacios A, De Vera M, Martínez-Escoriza JC (2013) Prenatal sonographic findings of duodenal duplication: case report. J Clin Ultrasound 41(Suppl 1):1–5. 10.1002/jcu.22007
12. Ballehaninna UK, Nguyen T, Burjonrappa SC (2013) Laparoscopic resection of antenatally identified duodenal duplication cyst. JSLS 17(3):454–458. 10.4293/108680813X13693422521151
13. Chiang LL, Hsieh WH, Shih JC, Hsu WM (2009) Treatment of duodenal duplication by trans-umbilical exploratory minimal laparotomy. Pediatr Neonatol 50(4):169–172. 10.1016/S1875-9572(09)60057-7

14. Seeliger B, Piardi T, Marzano E, Mutter D, Marescaux J, Pessaux P (2012) Duodenal duplication cyst: a potentially malignant disease. Ann Surg Oncol 19(12):3753–3754. 10.1245/s10434-012-2502-4
15. Demetriadis D, Ververidis M, Papathanasiou D, Bania D, Giannoulopoulos G (1997) Pancreatitis due to cystic duodenal duplication in a 12-year-old child. Eur J Pediatr Surg 7(2):109–111. 10.1055/s-2008-1071066
16. Malone FD, Crombleholme TM, Nores JA, Athanassiou A, D'Alton ME (1997) Pitfalls of the 'double bubble' sign: a case of congenital duodenal duplication. Fetal Diagn Ther 12(5):298–300. 10.1159/000264490
17. Alomar K, Mansour H, Qatleesh S, Eid N, Alkader MA, Al Dalati H (2023) Diagnosis and surgical management of a rare case of duodenal duplication cyst in a neonate: Case report and literature review. Int J Surg Case Rep 107:108354. 10.1016/j.ijscr.2023.108354
18. Narlawar RS, Rao JR, Karmarkar SJ, Gupta A, Hira P (2002) Sonographic findings in a duodenal duplication cyst. J Clin Ultrasound 30(9):566–568. 10.1002/jcu.10117
19. Shah PA, Saluja S, Cowles RA (2021) Duodenal Duplication Cyst. J Gastrointest Surg 25(6):1635–1637. 10.1007/s11605-020-04890-2
20. Cholewa D, Zimmer T, Pöthe H, Waldschmidt J (1995) Spheric duodenal duplication in a 13-year-old child. Eur J Pediatr Surg 5(3):184–186. 10.1055/s-2008-1066201
21. Rai BK, Zaman S, Mirza B, Hanif G, Sheikh A (2012) Duodenal Duplication Cyst having Ectopic Gastric and Pancreatic Tissues. APSP J Case Rep 3(2):15
22. Tantemsapya N, Chin A, Melin-Aldana H, Superina RA (2010) Intrapancreatic duodenal duplication cyst as a cause of chronic pancreatitis in a child. Eur J Pediatr Surg 20(2):125–128. 10.1055/s-0029-1224192
23. Pacifique JX, Jauquier N, Divjak N, Godat S, Vasseur Maurer S (2025) Echo-endoscopic drainage of retrogastric pancreatic pseudocysts as a bridge-to-surgery for complicated cases of duodenal duplication cyst: case report. Front Pediatr 13:1588823. 10.3389/fped.2025.1588823
24. Salazar E, Sin EI, Low Y, Khor CJL (2018) Insulated-tip knife: an alternative method of marsupializing a symptomatic duodenal duplication cyst in a 3-year-old child. VideoGIE 3(11):356–357. 10.1016/j.vgie.2018.08.006
25. Alomar M, Alomar K (2025) A unique case of enteric duplication cyst in a neonate: A case report study. Int J Surg Case Rep 128:111056. 10.1016/j.ijscr.2025.111056
26. Antaki F, Tringali A, Deprez P et al (2008) A case series of symptomatic intraluminal duodenal duplication cysts: presentation, endoscopic therapy, and long-term outcome (with video). Gastrointest Endosc 67(1):163–168. 10.1016/j.gie.2007.08.006
27. Gjeorgjievski M, Manickam P, Ghaith G, Cappell MS (2016) Safety and Efficacy of Endoscopic Therapy for Nonmalignant Duodenal Duplication Cysts: Case Report and Comprehensive Review of 28 Cases Reported in the Literature. Med (Baltim) 95(22):e3799. 10.1097/MD.0000000000003799
28. Meier AH, Mellinger JD (2012) Endoscopic management of a duodenal duplication cyst. J Pediatr Surg 47(11):e33–e35. 10.1016/j.jpedsurg.2012.07.035

29. Župančić B, Gliha A, Fuenzalida JV, Višnjić S (2015) Duodenal Duplication Cyst: A Rare Differential Diagnosis in a Neonate with Bilious Vomiting. Eur J Pediatr Surg Rep 3(2):82–84. 10.1055/s-0035-1558827
30. Merrot T, Anastasescu R, Pankevych T et al (2006) Duodenal duplications. Clinical characteristics, embryological hypotheses, histological findings, treatment. Eur J Pediatr Surg 16(1):18–23. 10.1055/s-2006-923798
31. Byun J, Oh HM, Kim SH et al (2014) Laparoscopic partial cystectomy with mucosal stripping of extraluminal duodenal duplication cysts. World J Gastroenterol 20(4):1123–1126. 10.3748/wjg.v20.i4.1123

Figures

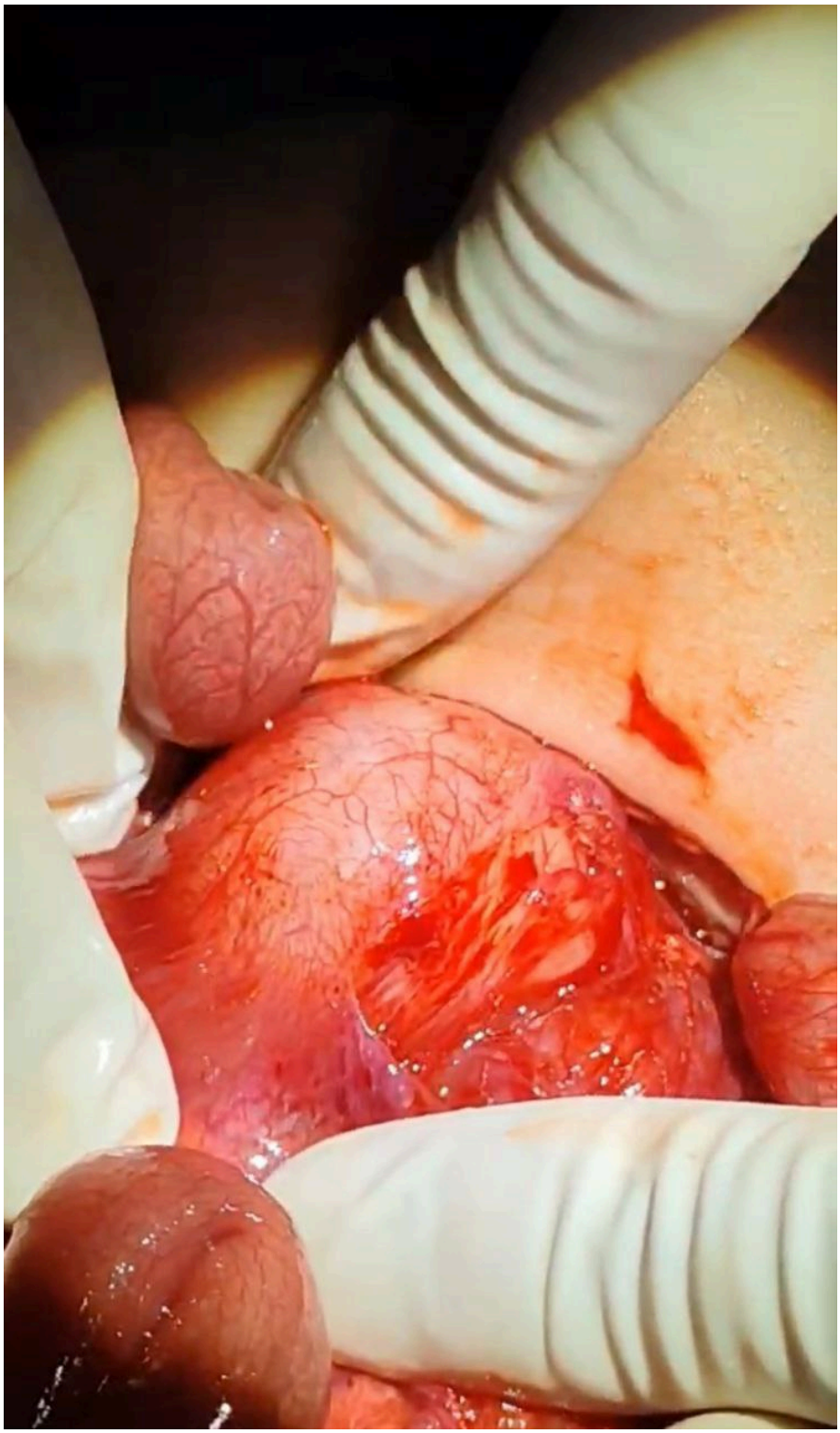


Figure 1

Intraoperative photograph of the duodenal duplication cyst. The cyst is visualized within the mesentery, initially mimicking an ileal origin. Meticulous dissection ultimately traced its definitive attachment to the second part of the duodenum

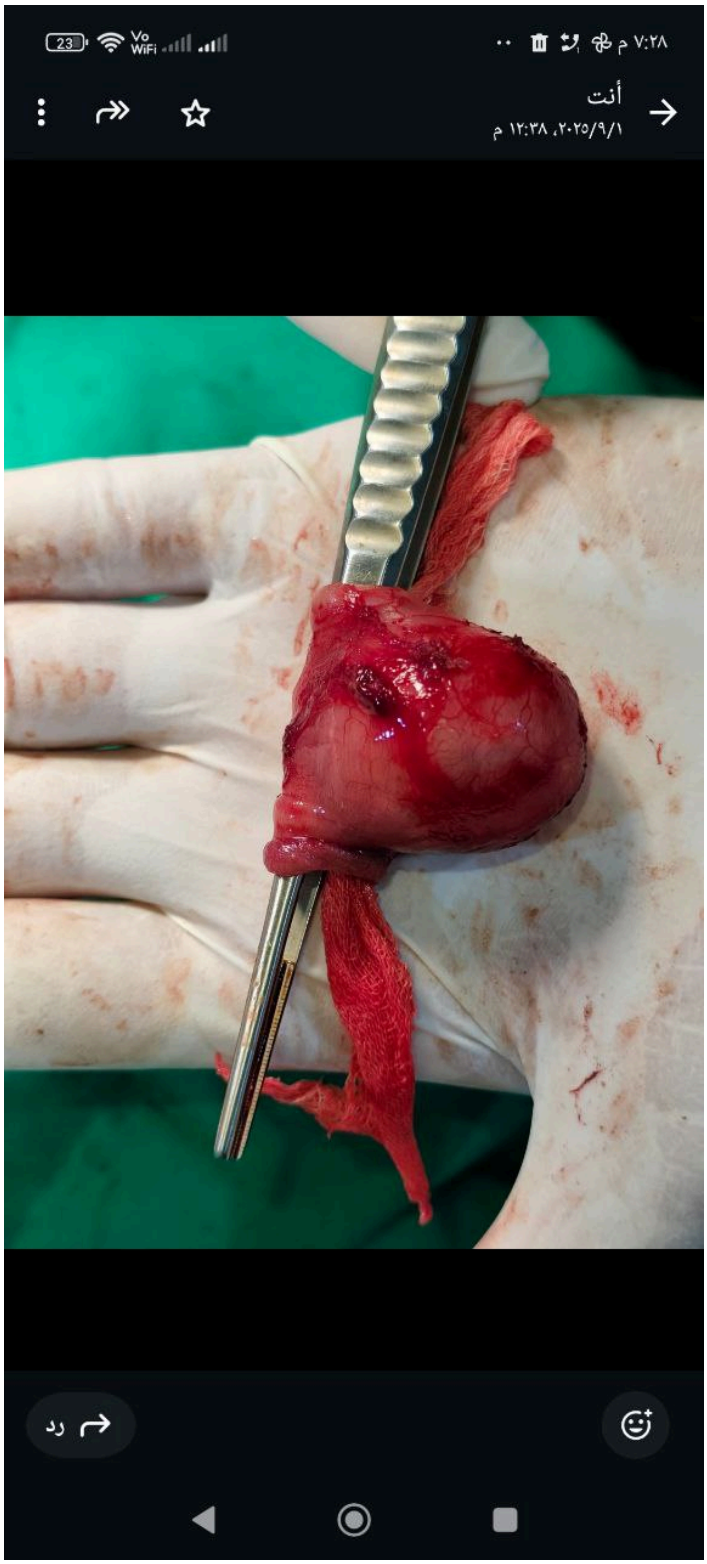


Figure 2

The resected surgical specimen. The duodenal duplication cyst measured 4 x 3.5 x 3 cm. Histopathological analysis confirmed duodenal wall layers with no evidence of ectopic gastric or pancreatic tissue.

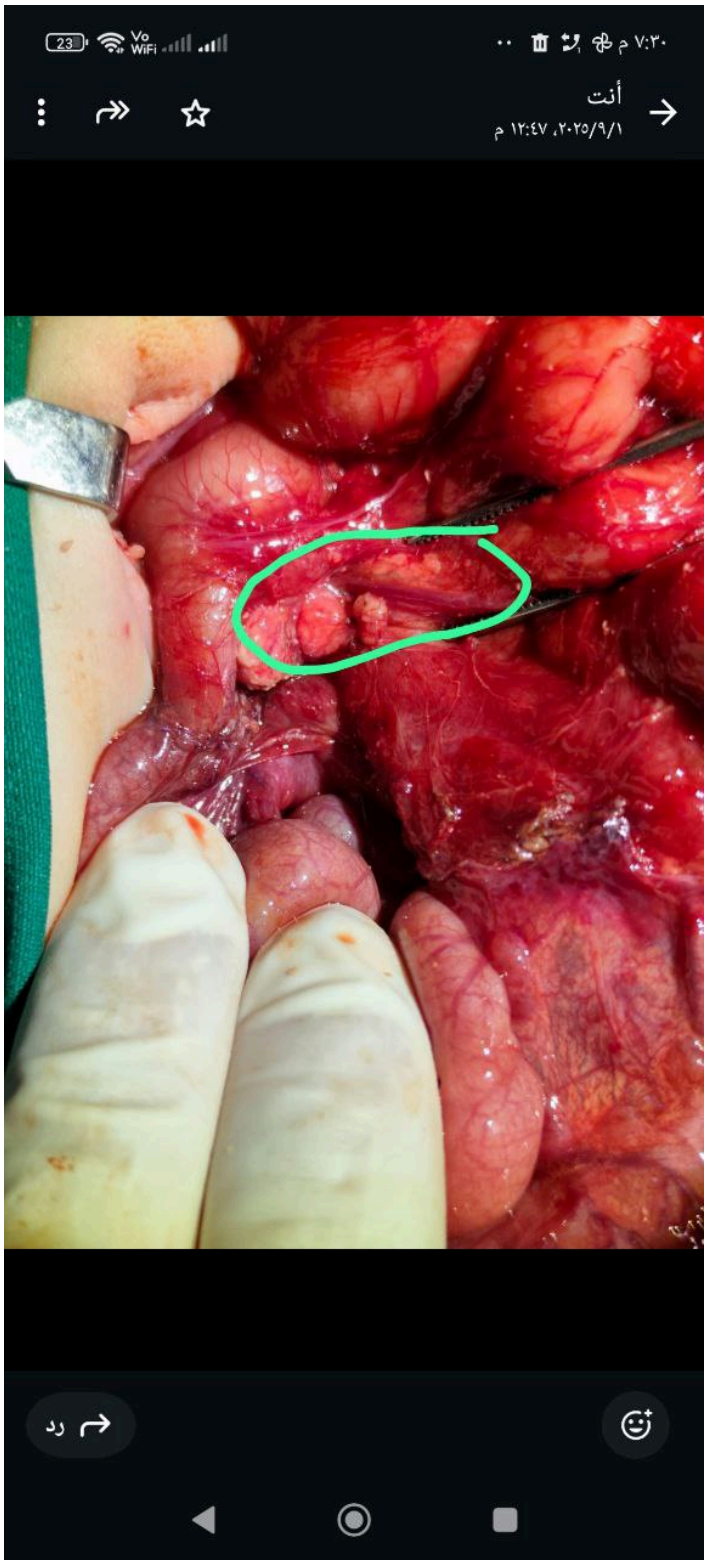


Figure 3

Completion of the primary duodenal anastomosis. Following complete resection of the cyst and the involved duodenal segment, a primary end-to-end anastomosis was performed.

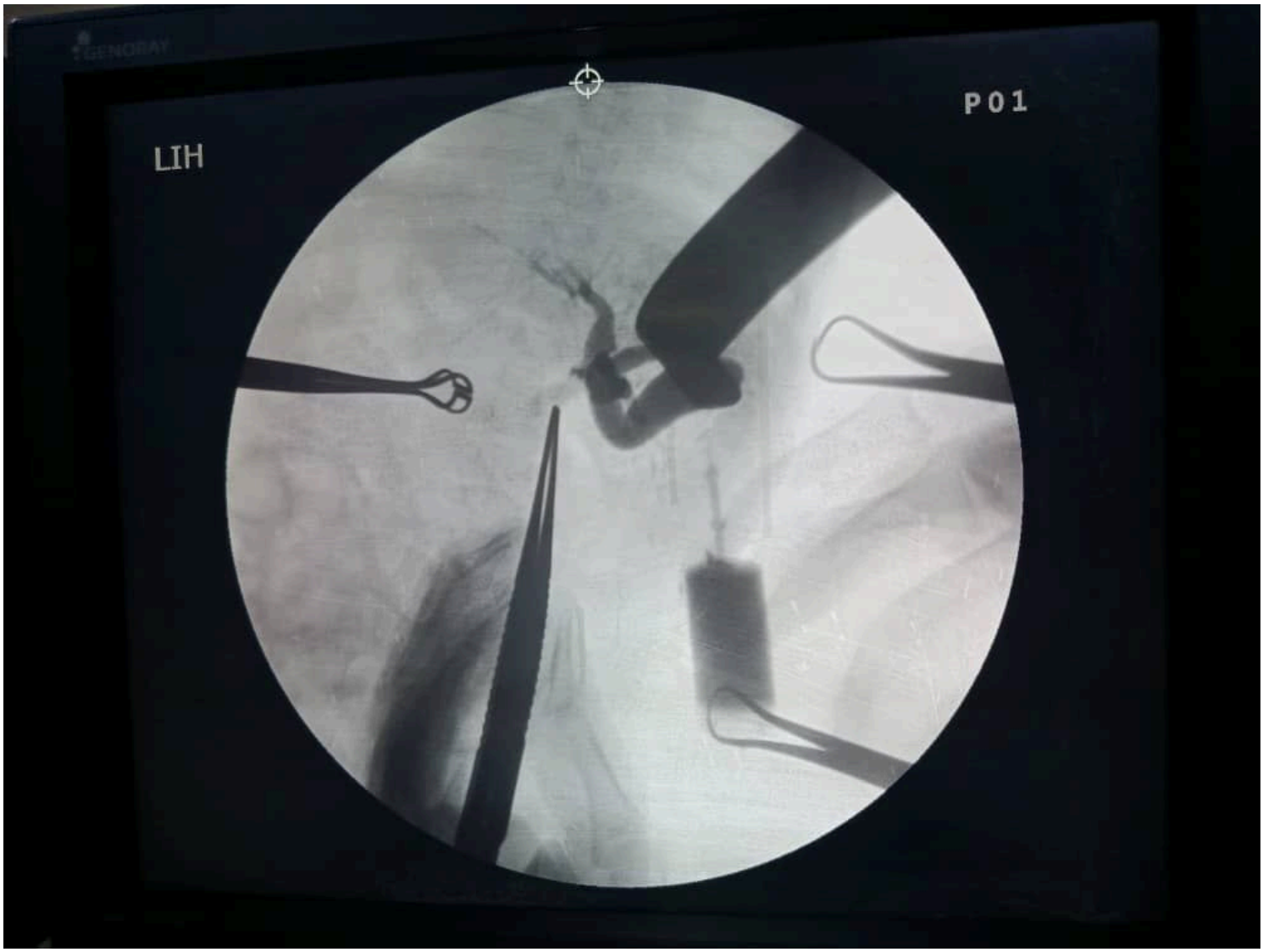


Figure 4

Intraoperative cholangiogram demonstrating complete distal biliary obstruction. Contrast injected via the gallbladder (GB) flows freely into the dilated proximal common bile duct (CBD) but fails to pass into the duodenum, confirming a complete obstruction at the level of the ampulla of Vater.

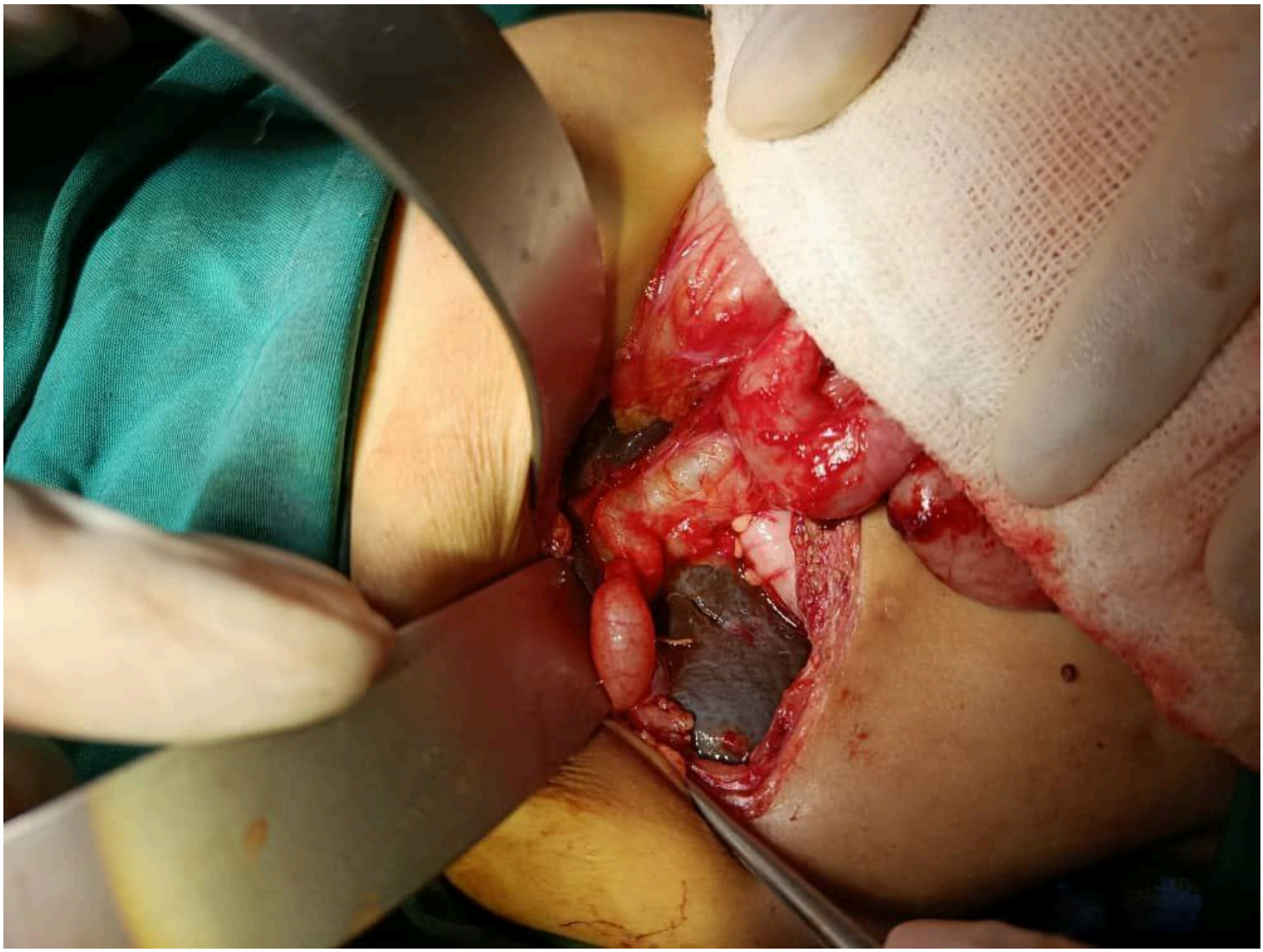


Figure 5

Intraoperative photograph of the dilated common bile duct. The proximal common bile duct (CBD) is markedly dilated proximal to the level of the ampullary obstruction, making it suitable for a biliary bypass procedure.

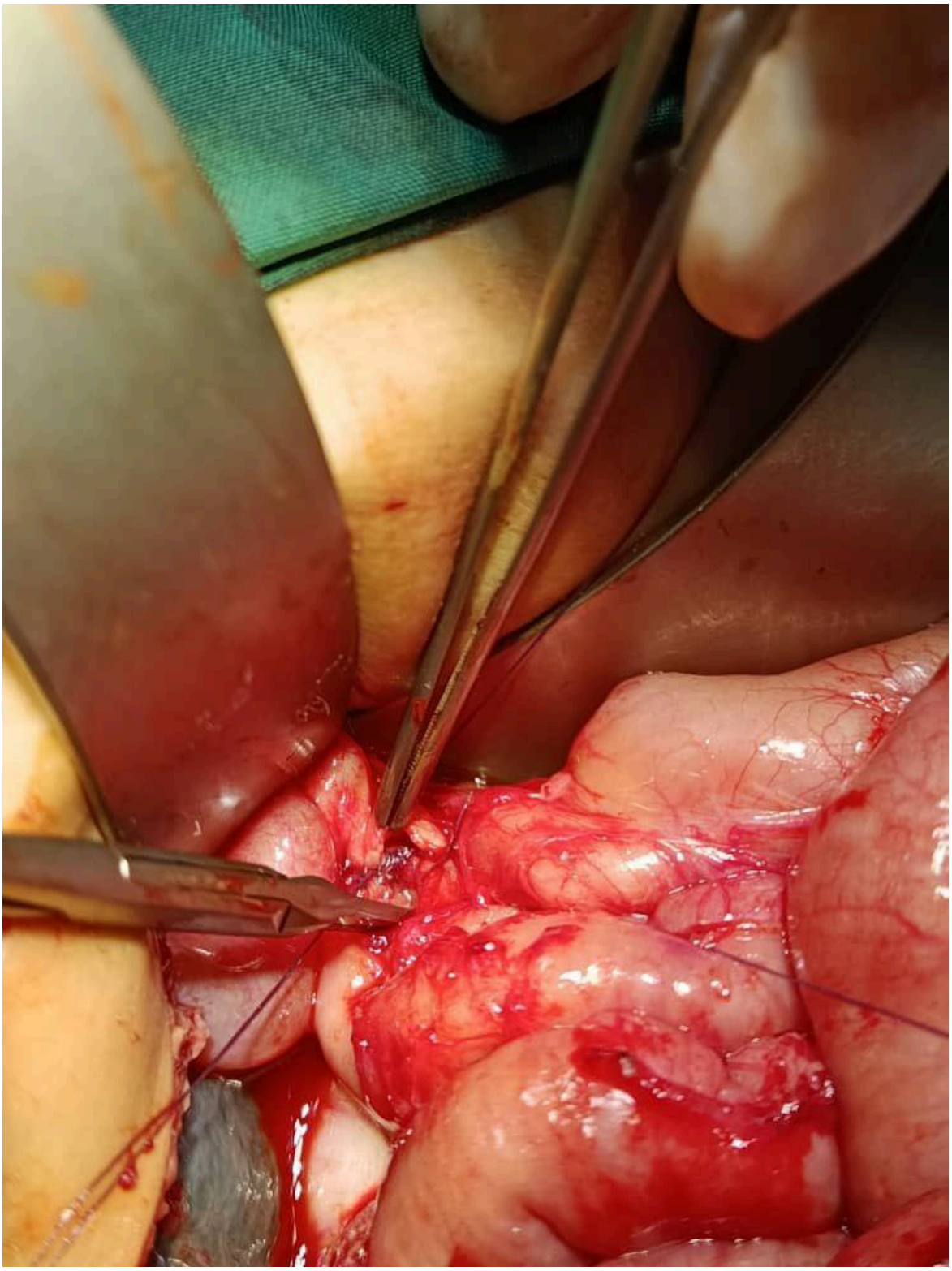


Figure 6

Creation of the choledochoduodenostomy. A side-to-side anastomosis was created between the dilated common bile duct and the adjacent duodenum to establish definitive biliary drainage. A stay suture is held by the forceps