

Cholecystoduodenostomy in Cats: indicate or not?

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ABSTRACT

Background: Cholecystoduodenostomy is a surgical procedure recommended for cats suffering from extrahepatic biliary tract obstruction (EHBT) when biliary tract patency cannot be reestablished. However, this procedure is associated with high perioperative morbidity and mortality. Cats diagnosed with EHBT are considered to be at high risk for anesthetic and surgical complications. This study reports the case of a cat with severe jaundice that underwent cholecystoduodenostomy and successfully recovered, sparking a discussion on whether this procedure should be recommended to treat EHBT.

Case: A 15-year-old neutered male domestic shorthair cat presented with progressive weight loss, abdominal distension, and jaundice. Serum biochemical analyses showed high alkaline phosphatase, alanine aminotransferase, γ -glutamyl transpeptidase, and total bilirubin levels. Abdominal ultrasonography revealed several abnormalities, such as enlargement of the common bile duct, distension of gallbladder, gallbladder wall thickening, hyperechoic hepatomegaly, large hepatic mass (5.5 x 8.7 cm in left medial lobe), and small irregular kidneys, while the results of serum biochemical analyses indicated liver dysfunction. The cat received supportive care treatment and was later subjected to hepatic mass removal surgery and cholecystoduodenostomy. Complications included postoperative hypotension and anemia, which were treated with a blood transfusion to correct the low packed cell volume (PCV). The cat's hypotension improved after the transfusion, and there were no complications related to the biliary enteric anastomosis. Unfortunately, 3 months after the surgery, the cat fell ill, exhibiting symptoms of anemia and jaundice, and was therefore euthanized. Necropsy revealed pancreatic carcinoma.

Discussion: The most common clinical signs of EHBT in cats are vomiting, anorexia, lethargy, weakness, and weight loss. The cat of this report showed weight loss and abdominal distension. Vomiting and anorexia may not be present in cats with EHBT. Abdominal ultrasonography is the primary imaging modality for biliary tract disease. The examination revealed an enlarged gallbladder with a thickened wall, moderately enlarged cystic duct, and dilated common bile duct, consistent with other reports in cats with EHBT. The diagnosis of complete versus partial biliary obstruction is challenging, as animals with this condition may respond to medical treatment instead of requiring immediate surgery. In this case report, the decision was made to prioritize medical management before considering surgery, in an attempt to stabilize the clinical condition and deal with the hepatic mass. The animal was elderly, but its owner insisted on surgery despite its clinical condition and age. The survival outcome of a cat with EHBT is influenced by various factors such as age, clinical condition, hepatic impairment, anesthesia, surgical expertise, and the medical expertise of the veterinary team. The cat of this report survived for 3 months after surgery. The veterinary team was initially hesitant to perform the surgery because the cat was in poor clinical condition and they doubted it would survive. However, the owner insisted on the operation. The question raised is: were the three months of survival worth it? For the owner, the 3 months of survival were worth it. When a veterinary team recommends surgery, it is important to consider the animal's clinical condition, the owner's perspective, and the surgical qualifications of the veterinary team.

Keywords: jaundice, extrahepatic biliary obstruction, cholecystoduodenostomy, pancreatic carcinoma.

DOI: 10.22456/1679-9216.143882

Received: 27 November 2024

Accepted: 11 May 2025

Published: 17 June 2025

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INTRODUCTION

Cholecystoduodenostomy is indicated in cats with extrahepatic biliary tract obstruction (EHBTO) when biliary tract patency cannot be restored. In cats, EHBTO may be caused by biliary neoplasia, pancreatic neoplasia, chronic pancreatitis, parasitic biliary infestation, or cholelithiasis [2,4,6,7].

However, this procedure is associated with high perioperative morbidity and mortality [6]. Cats with EHBTO are considered to have a high risk for anesthetic and surgical complications, leading to high mortality rates.

The veterinary and the pet owner's consideration of medical treatment can delay providing definitive surgical care, which can further compromise the patient's overall condition. Usually, they both have doubts about the timing of the operation for the patient.

This study aims to present a case of a senior cat with severe jaundice that underwent cholecystoduodenostomy, and successfully recovered, and discuss the recommendation of cholecystoduodenostomy as a treatment for EHBTO.

CASE

A 15-year-old castrated male, domestic short-hair cat presented with progressive weight loss and

abdominal distension at a veterinary clinic in Rio de Janeiro on April 4th. Physical examination revealed jaundice, thin body condition (body condition score < 4 on a scale from 1 to 9), dehydration, and a palpable abdominal mass.

Serum biochemical analyses showed high alkaline phosphatase, alanine aminotransferase, γ -glutamyltranspeptidase, and total bilirubin levels (refer to Table 1).

Abdominal ultrasonography indicated enlargement of the common bile duct, distended gallbladder, gallbladder wall thickening, hyperechoic hepatomegaly, a large hepatic mass (5.5 x 8.7cm in left medial lobe), and small irregular kidneys.

The cat received medical treatment before surgery, including parenteral vitamin K administration, antimicrobials, nausea medications, and hepatic protectors. After 3 days, on April 7th, subsequent serum exams showed improvement, and surgery was scheduled. However, one day before the scheduled surgery, on April 11th, the cat's condition worsened, resulting in the cancellation of the surgery.

A computed tomography scan suggested that the hepatic mass was compressing the common bile duct. Despite the risks, the owner requested surgery, knowing that the cat could die during the procedure.

Table 1. Blood test results before and after cholecystoduodenostomy.

Exams (Reference)	Date									
	April 4 th	April 7th	April 11 th	April 14 th	April 16 th	April 21 th	April 24 th	April 29th	May 9th	May 16 th
Ht	32	24	24	-	-	32.6	31.7	24	19	-
Leucogram	11,000	18,000	32,800	-	-	43,300	30,000	45,000	33,400	-
Creatinine (0.8-1.8)	2.2	2	-	-	-	2.2	2.7	-	3.7	0.8
Ureia (43-74)	94	88	-	-	-	-	91	-	222	30
Albumin (2.1 - 3.3)	2.9	1.33	2.06	-	1.81	1.87	2.5	-	2.6	-
Total Bilirrubin (0.15-0.6)	12.8	4.87	21.35	-	37.11	6.43	2.03	-	0.4	-
BD (0 - 0.3)	8.28	3.09	16.93	-	26.84	4.43	1.38	-	0.24	-
BI (0 - 0.5)	4.52	1.78	4.42	-	10.27	1.6	0.65	-	0.22	-
Potassium (4 - 4.5)	5	-	2.71	-	2.72	3.39	3.4	-	5	-
Alt (6 - 83)	1,096	-	-	-	-	-	155	-	105	99
Fa (25-93)	495	-	-	-	-	-	137	-	78	-
Ggt (1.8-12)	20	-	-	-	-	-	10	-	-	-

The cat was in poor clinical condition and unable to get up. Despite that, the owner requested surgery (Figure 1), which was performed on April 19th.

During the surgery, an exploratory laparotomy revealed that the hepatic mass was not compressing the common bile duct (Figure 2A), and it was successfully removed. The common bile duct was found to be tortuous; the duodenal papilla was thick and the pancreas was nodular and fibrotic. Due to time constraints, probing of the duodenal papilla was not performed during surgery (patency of the common bile duct by gallbladder expression or retrograde catheterization and flushing through the major duodenal papilla via duodenotomy). A cholecystoduodenostomy was performed to divert bile flow and correct icterus, without releasing the gallbladder from the liver to avoid excessive bleeding and prolonged surgery time, duodenal antimesenteric surface was transposed to achieve apposition of the gallbladder (Figure 2B). The omentum was adhered to the surgical wound. During the surgery, the cat experienced episodes of low blood pressure, which were managed with fluid administration, vasopressors, and alternative anesthetic strategies. Postoperatively, the cat received IV fluids, opioid pain medication, and antimicrobials.

Complications included postoperative hypotension and anemia, which were treated with a blood transfusion to correct the low packed cell volume (PCV). The cat's hypotension improved after the transfusion, and there were no complications related to the biliary enteric anastomosis. After surgery, the cat recovered well and he seemed like another cat, he was alert and stood (Figure 3) and was discharged 4 days later.



Figure 1. The cat was in poor bad clinical condition on day of surgery. The skin was yellowish and the abdomen was bulging (blue arrow). The cat didn't get up.

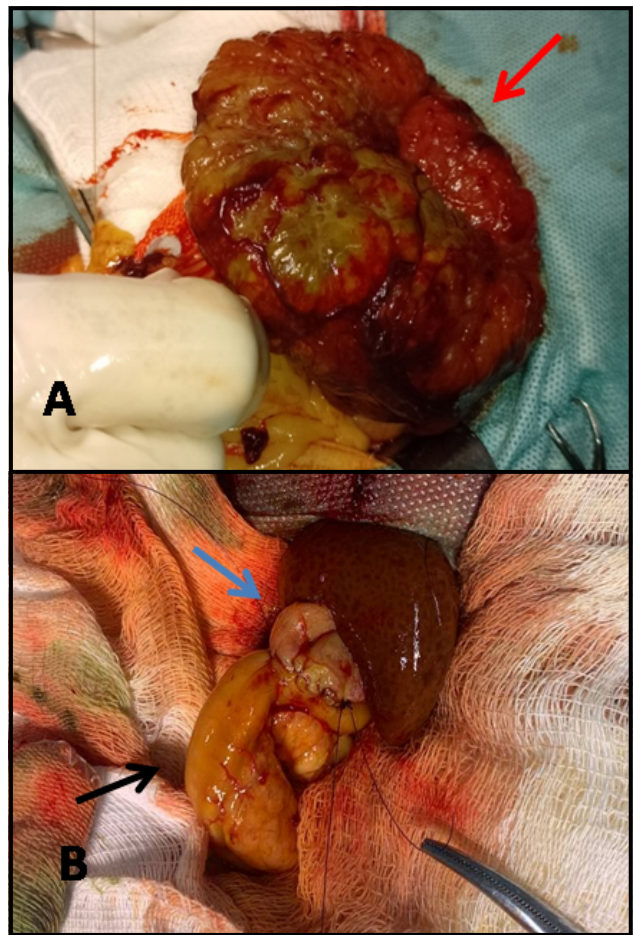


Figure 2. Exploratory laparotomy. A- It was observed that hepatic mass (red arrow), it was not adhered to any organ. B- Cholecystoduodenostomy was performed. Duodenal antimesenteric surface (black arrow) was transposed to achieve apposition of the gallbladder (blue arrow), without having to release it from the liver (modified cholecystostomy).

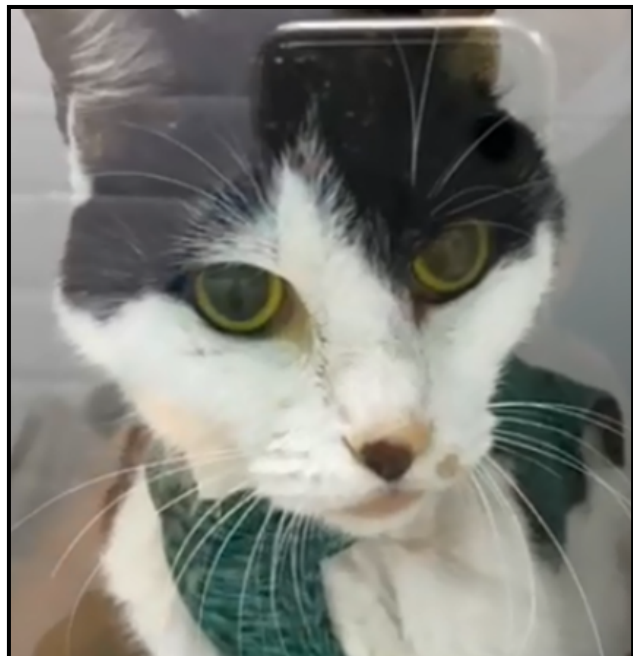


Figure 3. The cat 1 day after surgery, the cat recovered very well: he was alert and stood.

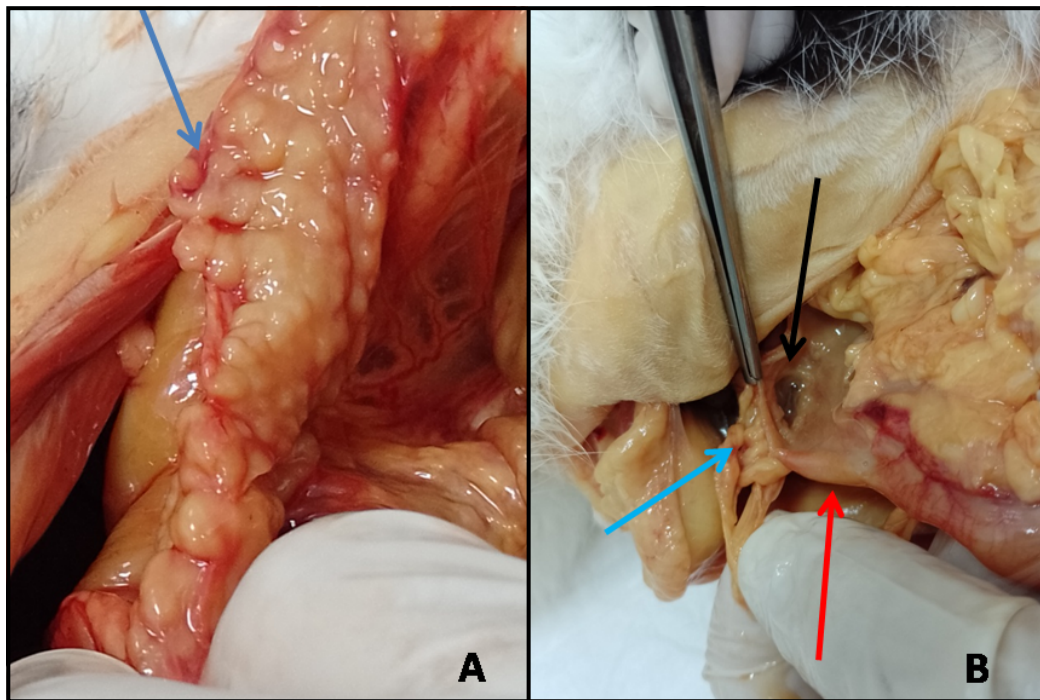


Figure 4. Necropsy of the cat. A- The pancreas was nodular (blue arrow). B- The cholecystoduodenostomy site was patent (black arrow). Blue arrow shows gall bladder and red arrow shows duodenum.

The results of CBC and serum biochemical tests after surgery are provided in Table 1. Postoperative values were lower than preoperative values. Total bilirubin levels were within the normal range on the 10th day after surgery.

Histopathology revealed the hepatic mass to be cholangiocarcinoma.

Unfortunately, 3 months after the surgery, the cat fell ill, exhibiting symptoms of anemia and jaundice. As a result, the decision was made to euthanize the patient. A necropsy was then performed, which revealed that the cholecystoduodenostomy site was patent. Additionally, the pancreas showed nodular characteristics, and a pancreatic biopsy revealed the presence of pancreatic carcinoma.

The hepatic carcinoma was probably a result of metastasis from the pancreatic carcinoma.

DISCUSSION

The most common clinical signs of EHBTO (extrahepatic biliary tract obstruction) in cats are vomiting, anorexia, lethargy, weakness, and weight loss [2,3,6]. The cat in the report

showed weight loss and abdominal distension. Vomiting and anorexia may not be present in cats with EHBTO [7].

Abdominal ultrasonography is the primary imaging modality for biliary tract disease [3]. The examination revealed an enlarged gallbladder with a thickened wall, moderately enlarged cystic duct, and dilated common bile duct, consistent with other reports in cats with EHBTO [3,5,7].

Animals with obstructive jaundice may have impaired myocardial contractility and decreased peripheral vascular resistance, which increases their susceptibility to hypotension [3]. This could explain the hypotension experienced by the cat during and after surgery.

It is difficult to distinguish between complete and partial obstruction, and because animals with this type of dilation without obstruction may respond to medical treatment, surgery can be delayed in favor of medical management [3]. In this report, attempts were made to stabilize the clinical condition and manage medical conditions before surgery. Despite the animal's senior age and difficult clinical condition, the owner preferred to proceed with surgery.

While there are indications for surgical treatment of obstructive biliary disease, there are variations in morbidity and survival rates following extrahepatic biliary tract surgery in cats [1,3,4,6]. Some cats with benign biliary obstruction did not survive surgery [6],

while cats with malignant biliary obstruction did survive, as in the reported case.

The survival outcome of a cat with EHBTO is influenced by various factors such as age, clinical condition, hepatic impairment, anesthesia, surgeon expertise, and medical expertise of the veterinary team. The decision to proceed with surgery for cats with EHBTO is challenging, but there have been cases of older cats with poor clinical conditions surviving with successful surgical intervention. If this cat had been presented with a benign obstruction, he would have survived for a long time. The cat in the report lived for 3 months after surgery. The veterinary team was initially hesitant to perform the surgery because the cat was in poor clinical condition and they doubted it would survive. However, the owner insisted on the surgery.

The question raised is: were the 3 months of survival worth it? For the owner, the 3 months of survival were worth it. When a veterinary team recommends surgery, it is important to consider the clinical condition of the cat, the owner's perspective, and the qualifications of the veterinary team for the surgery.

Cats with EHBTO should undergo surgery without delay. The patient's clinical condition greatly affects their response to the surgery, regardless of age. The surgery should be performed quickly. In this case, the surgery was successful. If the cat had a benign obstruction, it would have survived for a long time. Cholecystoduodenostomy is recommended for cats with common biliary duct obstruction.

Declaration of interest. The authors report no conflicts of interest. The authors alone are responsible for the content and writing of paper.

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