AUCTORES
Globalize your Research

International Journal of Clinical Case Reports and Reviews
Cipriani Maria Stella *

Open Access

Case Report

Endoscopic Cholecystoduodenostomy in Postoperative Common Bile Duct Stricture Secondary to Neuroblastoma Surgery: A Case Report

Cipriani Maria Stella [1,2]*, Piro Liliana [1,2], Palo Federico [1], Chiaro Andrea [3], Sorrentino Stefania [4], Gandullia Paolo [3], Parodi Andrea [5], Avanzini Stefano [1]

[1] Pediatric Surgery Department, IRCCS, Istituto Giannina Gaslini, 16147 Genoa, Italy.

[2] DINOGMI, University of Genoa, Genoa, Italy.

[3] Pediatric Gastroenterology and Endoscopy Department, IRCCS, Istituto Giannina Gaslini, 16147 Genoa, Italy.

[4] Oncology Unit, IRCCS, Istituto Giannina Gaslini, 16147 Genoa, Italy.

[5] Gastroenterology Unit, Ospedale di Lavagna, Lavagna, Italy.

***Corresponding Author:** Cipriani Maria Stella. Pediatric Surgery Department, IRCCS, Istituto Giannina Gaslini, 16147 Genoa, Italy.

Received Date: June 18, 2025 | **Accepted Date:** June 20, 2025 | **Published Date:** June 27, 2025

Citation: Cipriani M. Stella, Piro Liliana, Palo Federico, Chiaro Andrea, Sorrentino Stefania, Gandullia Paolo, Parodi Andrea, Avanzini Stefano, (2025), Endoscopic Cholecystoduodenostomy in Postoperative Common Bile Duct Stricture Secondary to Neuroblastoma Surgery: A Case Report, *International Journal of Clinical Case Reports and Reviews*, 27(1); **DOI:10.31579/2690-4861/622**

Abstract:

The management of postoperative adverse events in children affected by high-risk neuroblastoma (NB) is crucial for improving long-term quality of life and survival. In patients with centrally located abdominal-origin NB, the tumor mass can encase vital structures. Involvement of the biliary structures may necessitate partial surgical resection followed by surgical reconstruction. One significant adverse event is common bile duct (CBD) injury followed by stenosis. CBD stenosis poses a high risk of obstructive jaundice (OJ) and liver failure, requiring timely and often innovative interventions to ensure adequate biliary drainage.

Key words: obstructive jaundice; common bile duct; neuroblastoma

Introduction

The management of postoperative adverse events in children affected by high-risk neuroblastoma (NB) is crucial for improving long-term quality of life and survival. In patients with centrally located abdominal-origin NB, the tumor mass can encase vital structures. Involvement of the biliary structures may necessitate partial surgical resection followed by surgical reconstruction. One significant adverse event is common bile duct (CBD) injury followed by stenosis. CBD stenosis poses a high risk of obstructive jaundice (OJ) and liver failure, requiring timely and often innovative interventions to ensure adequate biliary drainage.

This is the first case reporting the use of endoscopic cholecystoduodenostomy in a six-year-old child as a solution for post-anastomotic stenosis of the CBD secondary to intraoperative injury during the resection of an abdominal NB.

Case report

A six-year-old female patient was admitted to the hospital following the detection of an abdominal mass. Comprehensive diagnostic workup included blood tests, radiological imaging, a meta-iodobenzylguanidine (MIBG) scan, bone marrow examination, and a tumour core needle biopsy. These confirmed stage M neuroblastoma (NB) with metastases to the bone marrow and vertebrae, along with MYCN amplification. Based on these findings, the tumour was classified as high-risk per the International Neuroblastoma Risk Group (INRG) pretreatment classification.

Initial treatment consisted of induction chemotherapy in line with the International Society of Paediatric Oncology Europe Neuroblastoma Group (SIOPEN) HRNBL1 protocol. Due to a suboptimal response, the patient received six additional cycles of chemotherapy followed by double hematopoietic stem cell transplantation.

After completing this treatment, she was referred to our institute for surgical intervention. Preoperative Magnetic Resonance Imaging (MRI) identified several image-defined risk factors (IDRFs), including tumour infiltration of the porta hepatis, encasement of the origins of the celiac axis and superior mesenteric artery, and infiltration of the

duodenopancreatic block. During tumour dissection, an incidental injury to the common bile duct (CBD) occurred, which was repaired using end-to-end anastomosis with biliary drainage. A partial tumour resection was achieved, leaving significant macroscopic residue. Pathological analysis revealed a composition of 75% Schwannian stroma and 25% neuroblastic cells, with 85% viable tumour and 15% post-chemotherapy necrosis

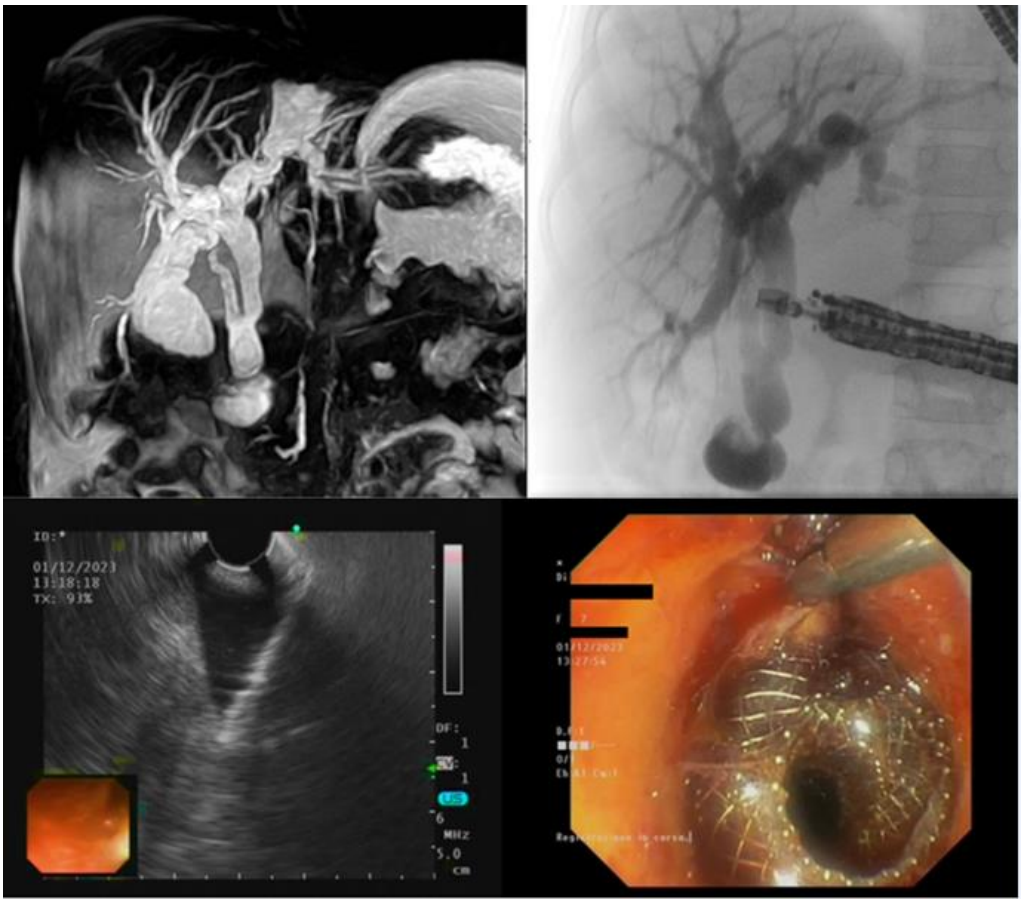

Figure 1: Ce-MRCP and ERCP 7 months after surgery showing the CBD stenosis. EUS-guided cholecystoduodenostomy.

The postoperative course was complicated by partial thrombosis of the left renal vein and persistent chylous effusion. The patient was discharged on postoperative day 36 and subsequently underwent radiotherapy per the HRNBL protocol.

Six months post-surgery, MRI showed stable residual tumour, persistent urinary catecholamine elevation, and a negative bone marrow examination. Based on these findings, the multidisciplinary tumour board opted against further treatment.

One month later, the patient presented with obstructive jaundice (OJ) and progressively increasing total bilirubin levels, peaking at 8.9 mg/dL. Contrast-enhanced magnetic resonance cholangiopancreatography (Ce-MRCP) revealed dilation of the left intrahepatic biliary system, gallbladder, and CBD, with complete obstruction of the distal CBD segment. Endoscopic retrograde cholangiopancreatography (ERCP) was unsuccessful due to complete tumour encasement of Vater's papilla. Subsequently, endoscopic ultrasound (EUS)-guided cholecystoduodenostomy was performed, involving the placement of a 10 x 10 mm Hot AXIOS™ lumen-apposing metal stent (LAMS) between the dilated gallbladder and duodenum. This intervention resulted in rapid bilirubin level reduction and significant clinical improvement. Follow-up evaluations confirmed complete resolution of intrahepatic bile duct dilation and normal contrast medium flow through the biliary tree.

At the three-month follow-up, the patient remained in good general condition with normal bilirubin levels. Endoscopic and radiological evaluations showed a stable residual tumour, spontaneous dislodgement of the LAMS device, and a stabilized cholecystoduodenostomy.

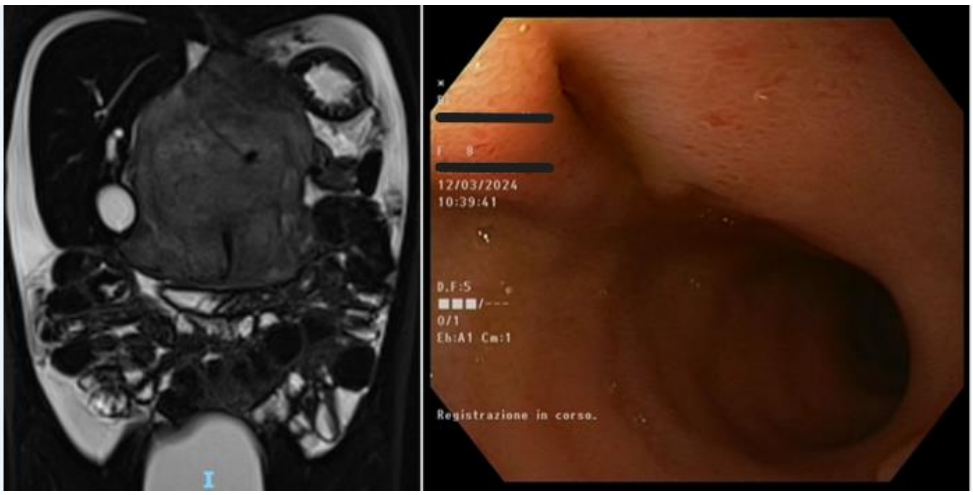

Figure 2: Postoperative MRI showed complete resolution of the intrahepatic bile ducts dilatation. Endoscopy revealing the spontaneous dislodgment of the LAMS device, alongside a stabilized cholecystoduodenostomy.

Discussion

The presented clinical case highlights the critical challenges in managing postoperative adverse events in high-risk NB, particularly focusing on CBD.

According to the INRG staging system, the extent of involvement of vital structures influences staging, therapeutic decisions, and prognosis in NB. Tumor encasement of the biliary tract is a rare event and is frequently associated with incomplete resection of the mass.

Management of biliary tract stenosis traditionally involves stent placement or surgical biliodigestive bypass. However, these methods may be constrained in cases where crossing the papilla of Vater is not feasible or when the tumor encases the main biliary tract.

The first description of endoscopic transduodenal drainage of the gallbladder using a pigtail biliary stent appeared in 2006[1].The LAMS was first described in animal studies in 2011[2],and its feasibility for EUS-guided gallbladder drainage (EUS-GBD) in humans was demonstrated in 2014 [3].

Currently, EUS-GBD using a LAMS is a frequently adopted technique in adults with acute cholecystitis or biliary obstruction due to malignancy or cholelithiasis outside of the cystic duct, particularly when invasive procedures are not feasible due to the patient's poor clinical status. This technique has been included as a minimally invasive treatment option in the updated Tokyo Guidelines for acute cholecystitis[4]. Moreover, it has been reported that EUS-GBD is an effective and secure rescue therapy for distal malignant biliary obstruction following failure of ERCP and/or EUS-guided bile duct drainage[5].

Literature on the management of OJ in NB includes temporary cholecystostomy tube placement, percutaneous transhepatic biliary drainage, and endoscopic internal biliary drainage[6], [7], [8]. However, the application of cholecystoduodenostomy with LAMS in pediatric oncology remains underexplored. This case represents the first documented use of endoscopic cholecystoduodenostomy in managing OJ in a child with NB.

In our experience, the innovative approach of endoscopic cholecystoduodenostomy has proven effective in bypassing CBD stenosis and alleviating associated jaundice. This minimally invasive technique facilitated rapid clinical improvement and significant reduction in bilirubin levels, offering a promising alternative to more invasive traditional surgical techniques.

Conclusion

In conclusion, advanced endoscopic approaches, such as cholecystoduodenostomy with LAMS, represent a notable advancement in managing iatrogenic CBD strictures, in pediatric patients. This case underscores the need for further studies to evaluate the efficacy, safety, and long-term outcomes of this innovative approach in children.

References

1. T. H. Baron and M. D. Topazian, “Endoscopic transduodenal drainage of the gallbladder: implications for endoluminal treatment of gallbladder disease,” Gastrointest Endosc, vol. 65, no. 4, pp. 735–737, Apr. 2007, doi: 10.1016/j.gie.2006.07.041.
2. K. Binmoeller and J. Shah, “A novel lumen-apposing stent for transluminal drainage of nonadherent extraintestinal fluid collections,” Endoscopy, vol. 43, no. 04, pp. 337–342, Jul. 2011, doi: 10.1055/s-0030-1256127.
3. J. H. Moon et al., “A newly designed fully covered metal stent for lumen apposition in EUS-guided drainage and access: a feasibility study (with videos),” Gastrointest Endosc, vol. 79, no. 6, pp. 990–995, Jul. 2014, doi: 10.1016/j.gie.2014.02.015.
4. K. Okamoto et al., “Tokyo Guidelines 2018: flowchart for the management of acute cholecystitis,” J Hepatobiliary Pancreat Sci, vol. 25, no. 1, pp. 55–72, Jul. 2018, doi: 10.1002/jhbp.516.
5. C. Binda et al., “EUS-guided gallbladder drainage using a lumen-apposing metal stent as rescue treatment for malignant distal biliary obstruction: a large multicenter experience,” Gastrointest Endosc, vol. 98, no. 5, pp. 765–773, Jul. 2023, doi: 10.1016/j.gie.2023.06.054.
6. F. Saettini et al., “Percutaneous Transhepatic Biliary Drainage in an Infant with Obstructive Jaundice Caused by Neuroblastoma,” Pediatr Hematol Oncol, vol. 32, no. 3, pp. 223–228, Jul. 2015, doi: 10.3109/08880018.2014.981901.
7. T. Okada et al., “Endoscopic internal biliary drainage in a child with malignant obstructive jaundice caused by neuroblastoma,” Pediatr Radiol, vol. 33, no. 2, pp. 133–135, Jul. 2003, doi: 10.1007/s00247-002-0781-9.
8. K. W. Gow et al., “Obstructive jaundice caused by neuroblastoma managed with temporary cholecystostomy tube,” J Pediatr Surg, vol. 30, no. 6, pp. 878–882, Jul. 1995, doi: 10.1016/0022-3468(95)90771-8.

DOI:10.31579/2690-4861/622