

A rare case of Laparoscopic cholecystectomy with Common bile duct exploration in an infant (youngest in world) with choledocholithiasis and CBD perforation

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Abstract:

Background: Symptomatic cholelithiasis With Choledocholithiasis is rare in children. While CBD perforation is very rare entity documented . Thus, a high degree of suspicion is required for diagnosis.

Case Details: Management guideline for infantile cholelithiasis and choledocholithiasis is still controversial; various the rapeutic strategies were reported successfully A 7-month-old infant from sikar, rajasthan presented to the SawaiManSingh hospital Jaipur Rajasthan on September 12, 2019 with irritability, abdominal pain, jaundice, fever and vomiting .On workup, she found to be having cholelithiasis with choledocholithiasis . She underwent laparoscopic cholecystectomy with CBD exploration on 14th of September 2019 and discharged with improved results. This is the first report of symptomatic cholelithiasis and laparoscopic cholecystectomy with CBD exploration in india at 7 months of age.

Conclusion: Cholilithiasis is rare in infants, and one should have a high index of suspicion for diagnosis. Cholecystectomy should be done as in adults if symptomatic.

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I. Introduction

Gallstones in infants under 1 year of age are uncommon. Furthermore, the majority of these infants stay asymptomatic and discovered on routine abdominal ultrasound, and eventually, most of them resolve spontaneously.[1,2]

There are well-known risk factors for cholelithiasis in infants such as prematurity, previous bowel or cardiac surgeries, hemolytic disorders, infections, and total parenteral nutrition (TPN). However, some reported cases had no identifiable risk fact.[3,4]

Symptomatic cholelithiasis and choledocholithiasis usually present with jaundice, clay-colored stool, irritability, and poor feeding. In addition, some cases develop complications such as cholecystitis and cholangitis.[2]

While there is not yet a gold standard in the management of choledocholithiasis in the pediatric population, the treatment approach has become clearer in recent years. In centers where pediatric ERCP is offered, the endoscopic approach for relieving biliary tract obstruction is safe and effective and is often employed as the first option [9–12]. Likewise, laparoscopic common bile duct (CBD) exploration has also been proven to be safe and effective and is an appropriate alternative, especially in locations where pediatric ERCP is not available [13–16]. As in adults, laparoscopic cholecystectomy for biliary stone disease in children is well accepted as the standard of care [16,17]. herein, we describe a case of an 7-month-old female infant treated with laparoscopic cholecystectomy and a successful trial of laparoscopic exploration of the common bile duct (CBD).

II. Case Report

An 7-month-old, term female infant from sikar, rajasthan presented to the Emergency Department Sawai Man Singh hospital Jaipur Rajasthan on September 12, 2019 with complains of abdominal pain, jaundice, fever and vomiting for 15 days. In addition, her abdomen was mildly distended with localized tenderness and guarding in right upper quadrant. she was also irritable, cried a lot, and refused to take feed .She was delivered as full term normal vaginal delivery at private hospital in sikar with birth weight of 2600 grams. She was the 1st child for the family. There was no history of jaundice , phototherapy , blood transfusion, long hospital stay or previous surgery or prolonged medication. There was no known gallstone disease hereditary condition in the family or immediate relatives . She had normal weight to age curve and neonatal period was normal.

On examination, the patient was vitally stable, febrile, active, irritable, and well hydrated with jaundice. Her abdomen was soft, mildly distended with localized tenderness and guarding over right hypochondrial region with no other significant findings on examinations. Initial laboratory work showed liver enzymes such as alkaline phosphatase (ALP): 275, gamma-glutamyl transferase: 510, aspartate aminotransferase: 40, alanine aminotransferase: 68, bilirubin-total (B-T): 2, with leukocytosis total leukocyte count -22000/ mm³.

Test	Preoperative 12/9/2019	Preoperative 13/9/2109	Post operative Day 2	Post operative day 4
Hb	9.9	9.4	8.4	7.5
Total leucocyte count	17330	22480	16140	12990
Alkaline phosphatase	-	275	223	-
Bilirubin (total / direct)	2/1	1.7/0.6	0.9 /0.4	-
Gamma glutamyl transferase	510	418	229	-
Aspartate aminotransferase (U/L)	70	68	44	-
Alanine aminotransferase (U/L)	20	40	53	-

Initial ultrasound on 9 september 2019 showed contracted gall bladder with IHBR and CBD prominent suggestive of small confluent echogenic focus along anterior aspect of lower CBD measuring 3 mm with CBD size 4 mm and mild ascites. Then patient underwent MRCP on 10 sept 2019 suggested small filling defect in distal CBD likely due to small calculus, proximal CBD measures 2.6 mm, distal portion of CBD not defined, CHD measures 2.5 mm, IHBR not dilated significantly and mild ascites was present.

She was admitted to general surgery unit with diagnosis of choledocolithiasis. After thorough evaluation and interdepartmental discussion symptomatic cholelithiasis with choledocolithiasis was diagnosed along with strong clinical suspicion of gall bladder perforation as peri GB collection noted on MRCP. She was started on iv fluids and antibiotics. As pediatric ERCP scope was not available in our institution patient planned for laparoscopic cholecystectomy with CBD exploration.

Operation details

A laparoscopic cholecystectomy was started, omentum was adhered densely over gall bladder. Gall bladder was distended. Gall bladder wall was edematous. Indocyanin dye was injected intravenously to see CBD and hepatobiliary system. significant dilatation of CHD & CBD was there CBD was perforated proximal to CBD stone. Clipping of cystic artery and cystic duct was done. cholecystectomy was done. CBD was explored through vertical incision over CBD near cystic duct junction and stone was retrieved. CBD was checked for clearance of stones till duodenum by CBD scope. 5 fr stent was placed in CBD. choledochotomy was closed Drain placed in subhepatic space.

After the operation, antibiotics were continued with other postoperative care. Significant clinical improvement was noted 3 days after operation, in which the patient regained his activities and started tolerating breast feed. Abdominal drain removed on Post operative day 3. USG whole abdomen done POD 2 signifies normal caliber of CBD & stent placed in situ, no collection noted in abdomen or pelvis subhepatic drain seen in situ. MRCP done on POD 3 showed CBD of normal diameter and stent placed in lower CBD extending upto duodenum. no sizeable collection in GB fossa noted. His laboratory results were near-normal by the 5th postoperative day. Patient discharged on POD 5 with regular 1 week follow up.

III. Discussion

Cholelithiasis is uncommon in children [18]. At present, the incidence of reported cholelithiasis and choledocholithiasis in infants is increasing but the management guidelines are still controversial because of the lack of systemic studies. there is evidence that infantile cholelithiasis and CDL can spontaneously resolve. Every case is unique and depending on the resources available at the given institution and the clinical scenario, there are multiple suitable treatment options. There is currently no convincing data to support one approach over another.

Starting with conservative management, spontaneous resolution was reported successfully in most of the asymptomatic cases.[1,5] If a patient is asymptomatic or has minimal symptoms, it is reasonable to initiate medical management with a period of watchful waiting and if liver functions improves repeat USG should be done in 48 hours to 2 weeks and likely there will resolution of bile stone disease. Symptomatic patients, on the other hand, usually required medical or surgical intervention. In addition, a retrospective study suggested that only those patients with reversible risk factors can have a spontaneous resolution, and those with irreversible

risk factors such as previous bowel surgeries usually require intervention[2]. A medical management using ursodeoxycholic and antibiotic with no surgical intervention was also reported successfully[3,6]

Though the potential complications of cholecystitis, cholangitis, and gallstone pancreatitis were not reported in the publications reviewed above, one must keep in mind that they certainly can occur and would pose an entirely new set of therapeutic challenges. Though it is rare, infantile CDL can lead to spontaneous biliary perforation.

The incidence of spontaneous biliary perforation is 1.5 per 1,000,000 live births [19], and there are approximately 150 cases in the literature since it was first reported in 1932 [20].

If a patient is symptomatic, or if medical management fails, an attempt should be made to clear the biliary tract. In these scenarios, ERCP has been proven to be as safe and effective in the pediatric population as in adults and, if available, should be considered first [21]. If ERCP is not available or not feasible, then common duct exploration via the cystic duct can

be undertaken. This can be done either laparoscopically or via an open approach, depending on the surgeon's preference. However, our patient was treated successfully with laparoscopic cholecystectomy and CBD exploration with no complications. Other less invasive strategies that were suggested by other physicians include radiological washing of stones using percutaneous tube,[7] balloon sphincteroplasty,[8] and endoscopic retrograde cholangiopancreatography.[4] Moreover, all of these reports showed similar success rate to our case.

IV. Conclusion

Infants can present with obstructive jaundice and features of localized peritonitis due to CBD perforation, as for medical and minimally invasive procedures, this condition can be treated successfully with cholecystectomy and CBD exploration with similar success rate and low rate of morbidity.

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Conflicts of interest

There are no conflicts of interest.

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