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Choledocholithiasis in Early Childhood: An Anomaly or Primary Calculi Formation

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ABSTRACT

Background: Primary CBD calculi in infants can be due to primary biliary disease, but are commonly due to distal obstruction & stasis due to choledochal cyst. Undetected, untreated cases may end up with recurrent cholangitis and malignancy later. In this case series, we have discussed about better treatment plan for patients presenting with such symptoms.

Aim: To study the management of CBD calculi in Infants.

Methods: Patients with diagnosis-of Common Bile Duct stones were studied. Four male-patients aged 6 mths to 12 months were studied. Patients presented with excessive-crying due to pain-abdomen and Jaundice. Two patients had an episodes of cholangitis earlier. The children underwent-investigations to look for hemolytic-anemia, Hb-electrophoresis, liver Function Tests, etc.

Results: These children had high-direct-bilirubin levels and high alkaline-phosphate-levels, radiological studies suggested dilated-CBD with Calculi. They underwent surgical-exploration, where dilated Common-Bile-Duct were found and cholangiography was-done, which showed-obstruction at distal-end with filling defects. The infants underwent-excision of dilated Common-Bile-Duct and Hepatico-jejunostomy. Histopathology reveale-choledochal-cyst in three patients. Postoperative-course was uneventful except in one pt who had biliary leak. All patients are doing well in a follow-up period of 1-year.

Conclusion: There seems to be a thin line separating diagnosis of primary choledocholithiasis and choledochal cyst(CDC). The choledocholithiasis has various treatment modalities but if it is CDC, the other the common-cause of CBD-dilatation and calculi which is an anatomical aberration warrants surgical excision & reconstruction which seems an exaggeration but treatment of choice gives them relief from obstructive jaundice and its sequelae.

Keywords: *Choledocholithiasis, Pediatric biliary stones, Common bile duct calculi, Choledochal cyst, Primary bile duct stones, Biliary obstruction, Infantile jaundice, Roux-en-Y hepaticojejunostomy, Congenital biliary anomalies, Early childhood hepatobiliary disorders*

1. INTRODUCTION

Choledocholithiasis, or the presence of calculi within the common bile duct (CBD), is relatively common in adults but distinctly rare in the pediatric population—especially in infants and toddlers.1 In this age group, when CBD stones are identified, they typically raise suspicion for underlying structural or systemic causes. Primary CBD calculi in infants may result from intrinsic factors such as altered bile composition, infection, or bile stasis, but they are more frequently secondary to distal obstruction. A common cause of such obstruction is a choledochal cyst—a congenital dilatation of the bile ducts that promotes bile stasis and recurrent inflammation, creating a favorable environment for stone formation. 2,3

If undetected or left untreated, choledocholithiasis in infancy may progress to severe complications such as ascending cholangitis, biliary cirrhosis, and eventually, in rare cases, cholangiocarcinoma.4,5 Given the nonspecific symptoms in young children—such as abdominal pain, irritability, jaundice, or vomiting—diagnosis often requires a high index of suspicion. 6,7 Ultrasonography remains the first-line imaging modality, and MRCP (Magnetic Resonance Cholangiopancreatography) is particularly helpful in delineating biliary anatomy and confirming the presence of stones or cystic dilatation.8 However, in many cases, a definitive diagnosis is made intraoperatively and confirmed by histopathological evaluation. 9,10

In this case series, we describe four infants presenting with upper abdominal pain and progressive jaundice. Imaging studies in all four cases showed a dilated CBD, leading to a preoperative diagnosis of choledochal cyst. Surgical management involving excision of the dilated CBD and Roux-en-Y hepaticojejunostomy was performed. Interestingly, histopathology confirmed choledochal cyst in only two patients, while the other two had isolated primary CBD calculi with no cystic

changes, suggesting a non-anomalous origin.

These cases highlight the diagnostic challenges in pediatric biliary disorders and underscore the importance of histological confirmation before labeling all such cases as choledochal cysts.

2. METHODS

Patients with diagnosis of CBD calculi were studied. Four male patients, aged 6 months to 12 months were studied. Patients presented with excessive crying due to pain abdomen and jaundice. Two patients had an episodes of cholangitis earlier. The children underwent investigations to look for hemolytic anemia including Hb electrophoresis, osmostic fragility test, peripheral smear, sickling test, liver function tests, MRCP and Intra-op cholangiography were done

3. STATISTICS

Four male infants aged 6 to 12 months (mean age: 8.25 months) were included. All presented with jaundice; two had cholangitis. MRCP showed CBD dilatation (7–9 mm) in all, with ABPDJ in three cases. All underwent CBD excision with Roux-en-Y hepaticojejunostomy. Histopathology confirmed choledochal cyst in all. One had a bile leak that resolved; three had uneventful recovery, and one was lost to follow-up.

Tables

S. No.	Age/Sex	Presentation	Mrcp	Lft	Surgery	Hpr	Complications And Follow Up
1	10 months/Male	Pain,jaundice, Cholangitis	Dilated CBD, 8mm ABPDJ+	High Bil, ALP, GGT	Excision of CBD and hepaticojejunostomy	CDC	None and Doing well
2	6 months/ Male	Pain,jaundice	Dilated CBD, , 9mm, ABPDJ+	High Bil, ALP, GGT	Excision of CBD and hepaticojejunostomy	CDC	None and Doing well
3	1year/ Male	Pain,jaundice, Cholangitis	Dilated CBD, 9mm	High Bil, ALP	Excision of CBD and hepaticojejunostomy	CDC	Leak, settled and fair
4	6 months/ Male	Pain,jaundice	Dilated CBD, 7mm ABPDJ+	High Bil, ALP	Excision of CBD and hepaticojejunostomy	CDC	None and lost to follow up

4. RESULTS

All patients had high direct bilirubin & high alkaline phosphate levels, none had hemolytic anaemia, imaging showed dilated CBD with Calculi, they underwent exploration, where dilated CBD were found with calculi & cholangiography was done, which showed obstruction at distal end with filling defects. They underwent excision of dilated CBD and Roux–n–Y hepaticojejunostomy and jejunojejunostomy. All operated patients are doing well. with one developed bile leak, settled after a week. Patients are under follow up clinical & investigative monitoring Histopathology: Choledochal cyst with demonstrated thickened fibrous connective tissue, absent/poor muscular layer with ulcerated, dysplastic mucosa & no malignancy. Liver biopsy showed no cirrhosis in any of these patients.

5. DISCUSSION

All patients had high direct bilirubin & high alk phosphate levels, none had hemolytic anaemia, imaging showed dilated

CBD with Calculi, they underwent exploration, where dilated CBD were found with calculi & cholangiography was done, which showed obstruction at distal end with filling defects.

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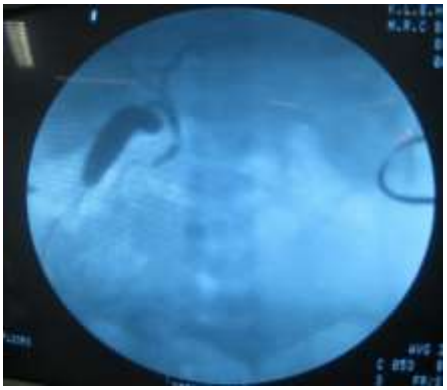
Histopathology: Choledochal cyst with demonstrated thickened fibrous connective tissue, absent/poor muscular layer with ulcerated, dysplastic mucosa & no malignancy. Liver biopsy showed no cirrhosis in any of these patients.

Various therapeutic strategies are reported, including ursodeoxycholic, antibiotics, radiological washing of stones using percutaneous tube, ERCP, Choledochoscopy extraction, Stenting & balloon sphincteroplasty. [5,6]

If diagnosis is CDC then, treatment is straight forward, but for calculi it is varied with reports of Dilated CBD excision, removal of calculi & Roux-en-y hepaticojejunostomy. [8,9]

ERCP & intervention procedures are difficult in these infants with calculi. [10]Surgically: Due to the smaller size, the anastomosis is technically difficult and should be performed carefully to avoid stricture and postoperative cholangitis. [7,8]

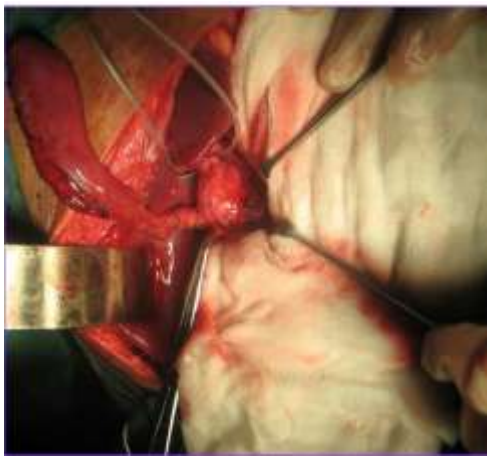
Patients after surgery do well invariably with no cholangitis and no risk of malignancy.



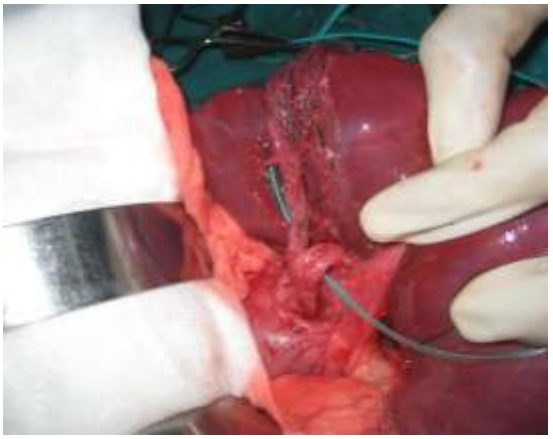
1 MRCP

2. Intraoperative Cholangiogram

Operative Photographs



3. Excision of Choledochal Cyst



4. Hepatic Duct

Preparation for Roux-en-Y Hepaticojejunostomy

5. Roux Limb Preparation for Hepaticojejunostomy

6. Completed Roux-en-Y Hepaticojejunostomy

6. ACKNOWLEDGEMENT

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REFERENCES

[1] Jeanty C, Derderian SC, Courtier J, Hirose S. Clinical management of infantile cholelithiasis. J Pediatr Surg 2015;50:1289-92.

[2] Keller MS, Markle BM, Laffey PA, Chawla HS, Jacir N, Frank JL. Spontaneous resolution of cholelithiasis in infants. Radiology 1985;157:345-8.

[3] Nordin N, Alex G, Clarnette T, Stephens N, Oliver M. Common bile duct stones in infancy: A medical approach. J Paediatr Child Health 2012;48:705-9.

[4] Mah et al. Management of suspected CBD stones in children: role of selective IOC and ERCP. Journal of pediatric surgery (2004)39 :808-812

[5] St-Vil D, Yazbeck S, Luks FI, Hancock BJ, Filiatrault D, Youssef S. Cholelithiasis in newborns and infants. J Pediatr Surg 22;27:1305-7.

[6] Mahendra S B, Hsmukh B V, Venugopal H .Choledochal cysts : A review of literature. 2019 , vol 18,: 4:230-236

[7] Maruyama K, Koizumi T. Choledocholithiasis in an infant of extremely low birthweight. J Paediatr Child Health 2020.38:204-5.

[8] Wilcox DT, Casson D, Bowen J, Thomas A, Bruce J. Cholelithiasis in early infancy. Pediatr Surg Int 1997;12:198-9.

[9] Puri P. Radiological treatment of common bile duct lithiasis in infancy. J Pediatr Surg 1989;24:946.

[10] Kalfa D, Barthet M, Chaumoître K, Panuel M, Sabiani F, Alessandrini P, et al. Balloon sphincteroplasty in the management of choledocholithiasis in a 10-week-old infant. Surg Laparosc Endosc Percutan Tech 2018;18:89-91.