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Spontaneous perforation of common bile duct in a young female: An intra-operative surprise

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ABSTRACT

INTRODUCTION: Spontaneous CBD perforation is one of the rare causes of acute abdomen in infants and extremely rare in adults. It is rarely suspected and correctly diagnosed preoperatively.
PRESENTATION OF CASE: A 17 year old female presented to Emergency Department with sudden onset of pain and distention of abdomen, associated with vomiting and non-passage of flatus and stool for 3 days and features of generalized peritonitis. On exploration, a perforation of size 0.5 cm in diameter was present on the antero-lateral surface of supraduodenal part of common bile duct (CBD) below the junction of cystic duct and common hepatic duct. Cholecystectomy done and the CBD repaired over a T-tube.
DISCUSSION: Spontaneous perforation of bile duct should ideally manage with T-tube drainage of the CBD along with cholecystectomy. In case with distal obstruction of the CBD, a biliary enteric bypass should be done.
CONCLUSION: Due to the paucity of cases, the index of suspicion for this diagnosis is low. But bilious peritoneal tap, features of generalized peritonitis and absence of free gas under diaphragm in abdominal x-ray may be considered as clues for suspicion. Accordingly, Surgery remains the mainstay of treatment.

1. Introduction

Spontaneous perforation of common bile duct was first reported by Freeland, in 1882 [1]. This condition is rarely seen in infants and occasionally it has been reported in adult following invasive procedure in and around Common Bile Duct (CBD) [2,3]. Because of rarity of cases preoperative diagnosis is difficult and delayed. We report an interesting, rare case of spontaneous CBD perforation in a young female with review of relevant literatures.

2. Case report

A 17 year old female presented to Emergency Department with sudden onset of pain and distention of abdomen, associated with vomiting and non-passage of flatus and stool for 3 days. There was no previous history of fever, hepatobiliary diseases, trauma or surgery. On examination, she was pale, febrile and dehydrated, with tachycardia and hypotension. The abdomen was distended. There was tenderness and guarding in the whole abdomen. Shifting dullness was positive without obliteration of the liver dullness. Peritoneal tap revealed biliary aspirate. Erect x-ray of abdomen showed no free gas under the diaphragm. Ultrasonography of the abdomen revealed moderate ascites with multiple septations. Blood parameters were within normal limit. She was resuscitated and planned for emergency laparotomy with a provisional diagnosis of peptic perforation.

On exploration, about 1.5 l of bilious fluid drained out. Stomach and duodenum were normal. Whole of small and large bowel found to be normal. Gall bladder wall was thickened without any stone or perforation. A perforation of size 0.5 cm in diameter detected on the antero-lateral surface of supraduodenal part of common bile duct (CBD) below the junction of cystic duct and common hepatic duct, Fig. 1. Cholecystectomy done and CBD explored. The CBD found normal caliber without any calculus. Distal patency of CBD was checked with 10 Fr infant feeding tube, as facility for intra operative cholangiogram was not available. The CBD repaired over a T-tube, Fig. 2. Peritoneal lavage done with warm saline and abdomen closed with

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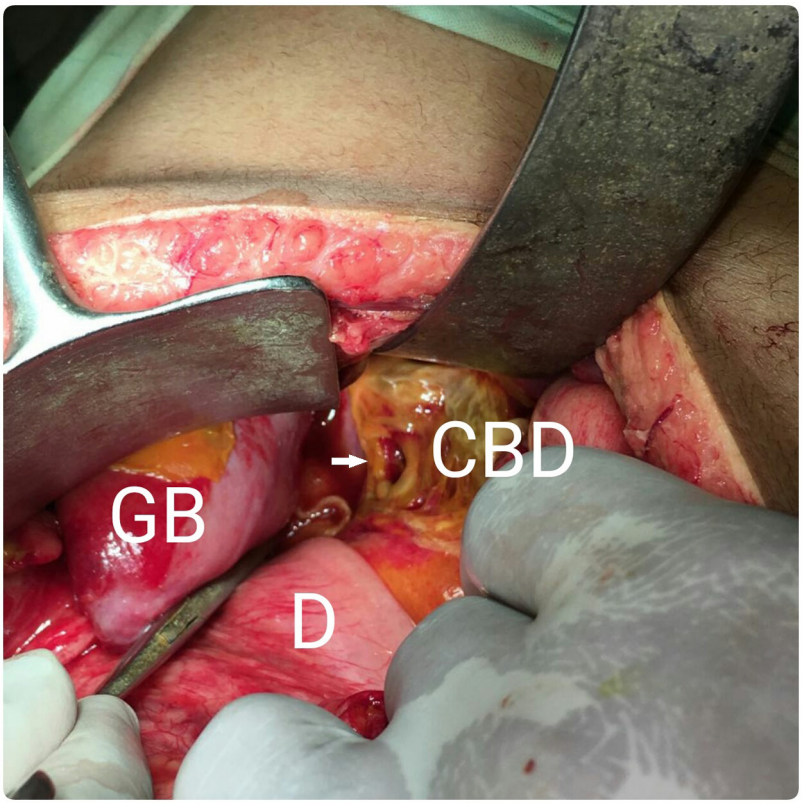

Fig. 1. Perforation of size 0.5 cm in diameter (*arrow*) on the antero-lateral surface of supraduodenal part of common bile duct (CBD) below the junction of cystic duct and common hepatic duct. (GB = Gall Bladder, D = Duodenum).

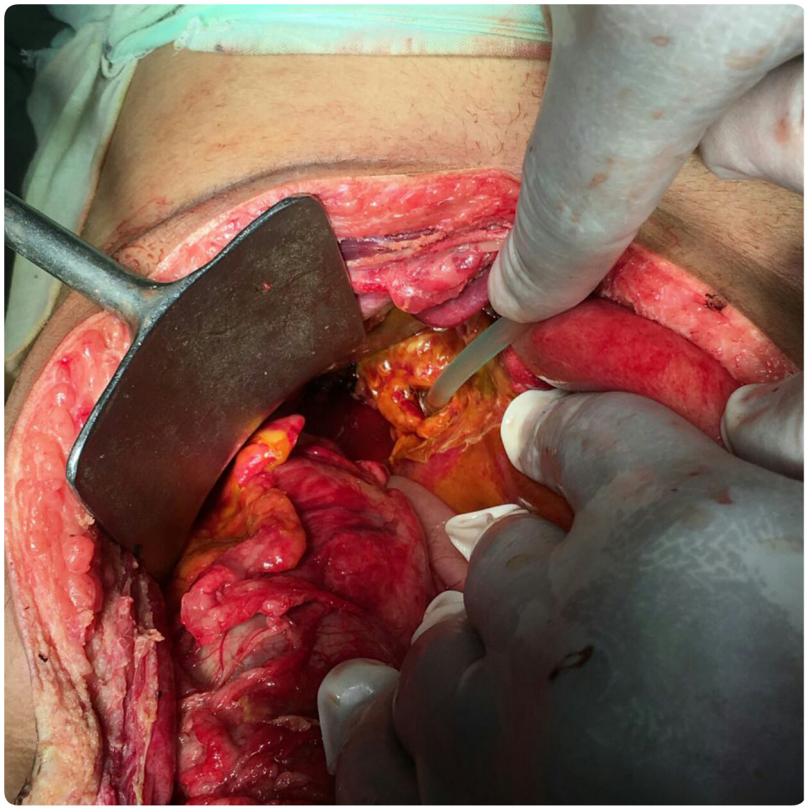

Fig. 2. Placement of T-tube at the site of perforation.

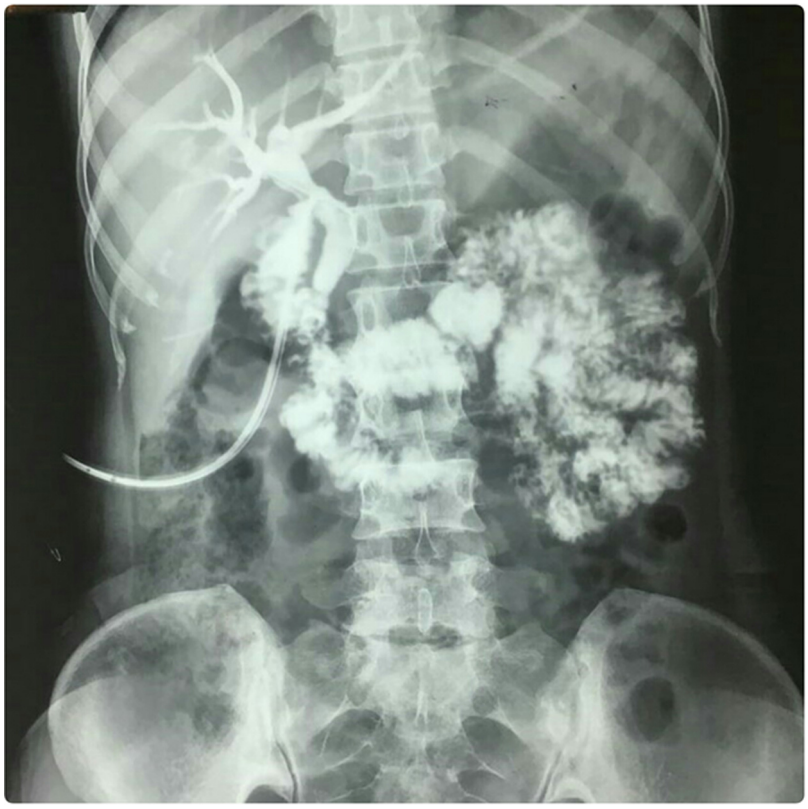

Fig. 3. Post operative T-tube cholangiogram showing passage of contrast into the jejunum.

a subhepatic drain. Bile culture showed no growth and widal test was negative. Patient was sero-negative for HIV, HBsAg and HCV. Investigations for tuberculosis revealed no abnormality. The post operative recovery was uneventful. A T-tube cholangiogram performed on 14th post operative day, which showed normal, with free flow of bile into the duodenum and jejunum without any filling defect, Fig. 3. Histopathology study of the gall bladder showed chronic inflammation. The patient discharged on 16th post operative day after removal of T-tube. On follow up after 6 months she was doing well.

3. Discussion

Spontaneous CBD perforation is one of the rare presentations of acute abdomen in infants and extremely rare in adults. The most frequent cause of spontaneous bile duct perforation is idiopathic. Weakness in the bile duct wall, obstruction distal to the perforation or a combination of both has been suggested theories for the cause of perforation. Weakness of the wall of the bile duct may be due to congenital weakness, choledocal cyst, ischemia of bile duct, pancreatic reflux, pancreatitis, birth trauma, torsion of gall bladder, presence of diverticulum, tuberculosis of CBD, abnormal glands of the bile duct wall, necrotizing enterocolitis or viral infection of the bile duct. Congenital stenosis of ampulla of Vater, congenital malformation of pancreaticobiliary junction, choledocholithiasis, inspissated bile, biliary sludge, protein plugs, obstruction of CBD by tumor, parasites or spasm of spincter of Oddi may lead to raised canalicular pressure and cause perforation [4–8]. The junction of cystic duct and hepatic duct is the most common site of perforation [2,9]. Other sites include cystic duct, common hepatic duct and common bile duct. Perforation is also found following biliary surgery and interventions.

Most of the patients present with progressive jaundice, painless abdominal distention and acholic stool. About 20% of patients present with fever, vomiting with signs of fulminant peritonitis, toxemia, shock, with or without icterus [10] and usually interpreted as a case of viscus perforation, as in our case.

Blood parameters and ultrasonography of abdomen showing free or loculated intraperitoneal collection are usually less specific for diagnosis. Abdominal paracentesis usually reveals presence of bile stained fluid. X-ray of abdomen in erect posture does not reveal free gas in the peritoneal cavity. Hepatic scintigraphy has been shown to be a highly sensitive and a specific investigation modality for spontaneous bile duct perforation [11].

The management depends upon availability of intra-operative cholangiogram. Primary suture repair of the CBD is considered if a peroperative cholangiogram shows no pathology distal to the perforation. In cases with distal obstruction of the CBD, a biliary enteric bypass should be considered. If peroperative cholangiogram is not available, then the condition is best managed by closure over a T-tube along with cholecystectomy [12], as done in our case. Simple peritoneal drainage with T-tube is also recommend even if there is a distal obstruction, because exploration of the porta-hepatis may be hazardous at emergency and this entails less morbidity and has a good chance of recovery from the condition or at least stabilizing the patient for second look definitive surgery [10].

4. Conclusion

Spontaneous perforation of the extra-hepatic bile duct is a rare but important condition in adults and needs a high index of suspicion during day to day practice. Knowledge of this condition, the clinical presentation, expert ultrasound examination combined with hepatic scintigraphy if required, helps in early diagnosis and management of the patient. Conservative surgery is the mainstay of treatment.

Conflict of interest

The Authors declare that there is no conflict of interest.

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Ethical approval

Not applicable. No research study involved.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contributions

Dr Sudhir Kumar Mohanty: the conception and design of the study, analysis and interpretation of data, drafting the article, revising it critically for important intellectual content, final approval of the version to be submitted.

Dr Tanmaya Mahapatra: the conception and design of the study, analysis and interpretation of data, drafting the article, revising it critically for important intellectual content, final approval of the version to be submitted.

Dr Bharat Kumar Behera: the conception and design of the study, analysis and interpretation of data, drafting the article, revising it critically for important intellectual content, final approval of the version to be submitted.

Dr Bidyapati Acharya: the conception and design of the study, analysis and interpretation of data, drafting the article, revising it critically for important intellectual content, final approval of the version to be submitted.

Dr Supreet Kumar: acquisition of data, drafting the article, final approval of the version to be submitted.

Dr Jyoti Ranjan Dash: acquisition of data, drafting the article, final approval of the version to be submitted.

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Dr Malaya Ranjan Sarangi: acquisition of data, drafting the article, final approval of the version to be submitted.

Dr Shiva Prasad Sahoo: acquisition of data, drafting the article, final approval of the version to be submitted.

Guarantor of submission

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