Case Report

Double Cystic Duct : Case Report of a Rare Presentation in a Common Operation

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Variations of cystic duct anatomy are not uncommon and are continuously encountered during imaging and surgery. Failure to identify these variations may result in complications during Surgical, Endoscopic, Percutaneous Intervention Procedures. Though variation of the cystic duct anatomy is common but it's duplication is a very rare entity with about 16 cases reported so far. The diagnosis may be missed by imaging studies including MRCP.

Here we present a case of double cystic duct arising from a single Gall Bladder in a 54-years female patient admitted for Cholecystectomy at ILS Hospitals, Kolkata. She underwent Laparoscopic Cholecystectomy which revealed the presence of H type of double cystic duct. It was confirmed by intra-operative cholangiography. Both the cystic ducts were dealt appropriately and the patient had an uneventful postoperative recovery. She is being followed up regularly and is healthy.

In conclusion, duplication of the cystic duct is a very rare occurence.it's pre or intraoperative identification is important to avoid ductal injury.

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***Key words* : Double cystic duct, CBD injury, Laparoscopic cholecystectomy, Anatomic variations of cystic duct.**

Variations of Cystic Duct (CD) anatomy are not uncommon and are continuously encountered during imaging and surgery. Failure to identify these variations may result in complications during Surgical, Endoscopic or Percutaneous Intervention procedures. Hence a proper knowledge and pre-operative or intra-operative identification of these variations are of utmost importance to prevent the incidence of Common Bile Duct (CBD) injury during cholecystectomy.

Though cystic duct variation is common, duplication of cystic duct is an extremely rare variant with only 16 cases reported in literature[1]. The diagnosis can be missed by imaging studies and is generally identified intraoperatively[2]. However, it may go unidentified during the surgery and is then identified in the postoperative period during a diagnostic work up for patients presenting with persisting biliary symptoms[3].

Here we present a case of Double Cystic Duct (DCD) arising from a single Gall Bladder in a 54-year female patient admitted for Cholecystectomy at ILS Hospitals, Kolkata.

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Editor's Comment :

- Variations in the anatomy of cystic duct is not uncommon.
- A surgeon should be well versed with them for avoidance of injury to the common bile duct.
- Proper pre-operative investigations including imaging studies should be done for its identification, if any doubt arises intra-operatively, an IOC should be performed.

Case Report

A 54-year-old female presented with complaints sharp pain in the epigastric region which was radiating to right shoulder. The pain was associated with nausea. The patient was diagnosed as Gall Stone pancreatitis and was admitted for cholecystectomy.

On examination she had severe epigastric tenderness. All the vital signs were stable and there was no other significant finding[3].

Routine pre-operative investigations were essentially normal. USG of the abdomen showed multiple Gall stones, and the CBD was normal in Caliber with a diameter of 6 mm. Magnetic Resonance Cholangio-pancreatography (MRCP) revealed Calculous Cholecystitis, prominent proximal common bile duct without obvious luminal altered signal intensity. There was no sign of double cystic duct in MRCP.

Patient underwent standard four port laparoscopy which revealed thick walled gallbladder with dense adhesions. Adhesiolysis was done.Calot's triangle dissection showed Double Cystic Duct with single cystic artery. Presence of double cystic duct was confirmed by

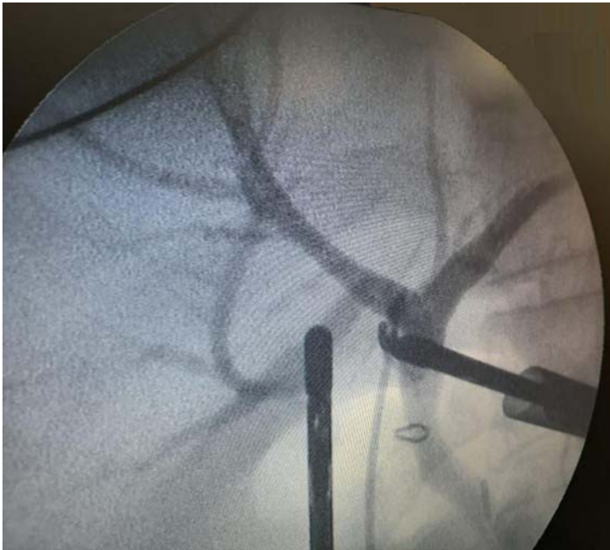

Fig 1 — Intra-operative cholangiogram of double cystic duct

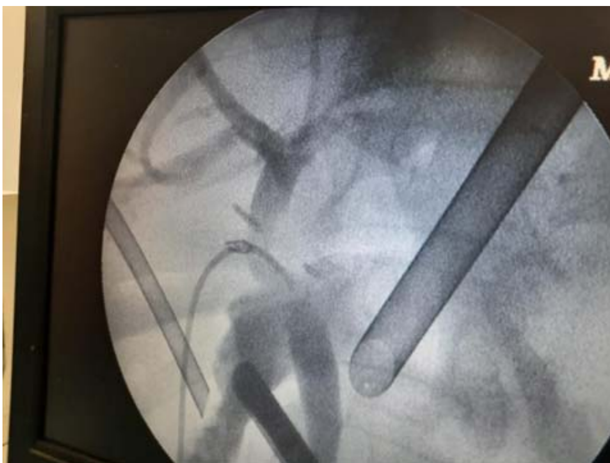

Fig 2 — Intra-operative cholangiogram of double cystic duct

Intra-operative Cholangiography (IOC) (Figs 1 and 2). One cystic duct was clipped with hemolock and the 2nd cystic duct, seen to be draining into the right hepatic duct, was short in length and hence sutured with 3-0 vicryl. Macroscopic examination of the specimen showed the presence of double cystic duct (DCD). The patient was discharged in a stable condition after 48 hours.

The patient is being followed up regularly and she is stable and healthy. Histopathological examination revealed chronic cholecystitis.

Discussion

Variations in the anatomy of the cystic duct, especially DCD, intraoperatively during cholecystectomy is a matter of concern for the surgeons. Variation of cystic duct anatomy is not rare[4]. A standard anatomical relation between the extrahepatic bile duct, cystic duct and arteries is seen in only 1/3rd of the individuals. In 2/3rd of the patients, the cystic duct enters into the Common Bile Duct (CBD) in an angular fashion. In about 1/5th cases the cystic duct runs parallel to the CBD and it's the entry into the CBD is straighter. In less than 10% cases the cystic duct runs spirally taking a tortuous course and connecting the CBD at different angles. In less than 1% of the patients, it is seen to be draining directly to the right hepatic duct. Presence of two cystic ducts ia a very rare event[2]. It is seen more commonly in the females with an incidence of 73%[1]. No age is exempt from this and its time of presentation can range from new born to 76 years old[5,6]. Our case was a 54-year-old female. Vincente *et al* reported a case of a neonate with VACTERL anomaly showing the presence of DCD during cholecystectomy for symptomatic cholelithiasis[6]. Otaibi *et al* showed the presence of double Gall Bladder in DCD in 80% of the cases[7]. However, about 1/3rd of the reported cases of DCD are associated two Gall Bladders. In our case we did not find any accessory Gall Bladder and both cystic ducts drained from same Gall Bladder (Fig 3). The classification of DCD byFlannery and Caster according the configuration of the ductsis as follows. The "H type" is the commonest type where the second cystic duct drains separately into either the left, right or Common Hepatic Duct (CHD). In the"Y type" variant, both the cystic ducts first unite to form a common duct which then drains into the common hepatic duct. The trabecular type is the where the accessory duct drains directly into the Liver Substance[8]. Our patient had an H type variant of DCD with one duct draining in the CBD and the second duct draining into the RHD. Pre-operative diagnosis of DCDis

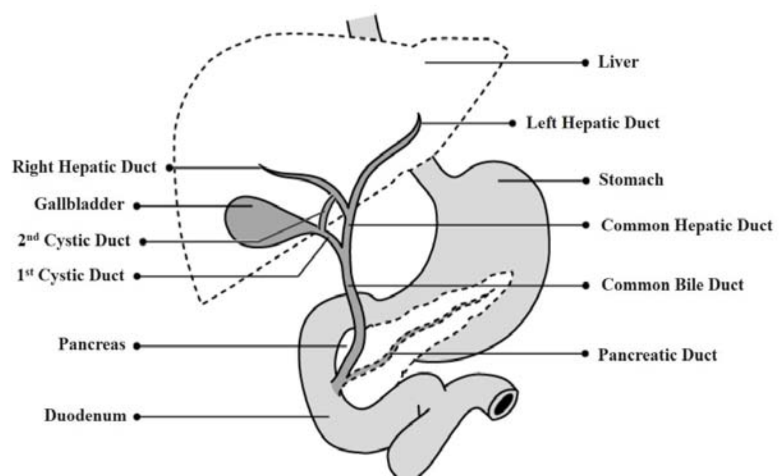

Fig 3 — Schematic Representation of Double Cystic Duct

very difficult due to the rare nature of this variation and also there is difficult identification of the two ducts radiologically.

Both ultrasound of the abdomen and MRCP failed to reveal the presence of DCD in our case. Some surgeons like to go for routine use of intraoperative cholangiography to delineate bile duct anatomy which prevents injury to the CBD that might occur because of the presence of different variations of the cystic duct anatomy.

Conclusion

Duplication of the cystic duct is a very rare occurence. It's pre or intraoperative identification is important to avoid ductal injury.

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