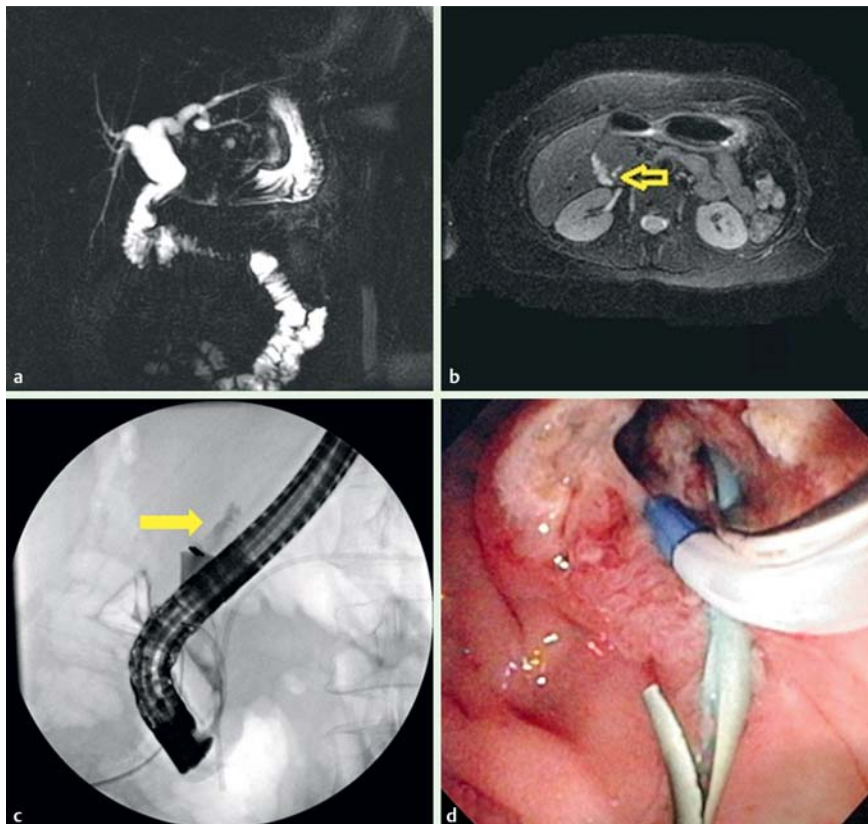


## Endoscopic repair of a massive postoperative pancreatic juice leak through the bile duct stump due to pancreatobiliary maljunction



**Fig. 1** **a** Radiographic image in a patient with a choledochal cyst, Todani type IVA, showing massive dilatation of the common bile duct (CBD) and saccular dilatation of the intrahepatic ducts. **b** Computed tomography (CT) scan showing an obvious pancreatobiliary maljunction (PBMJ); Komi type IIb) and an acute angle of insertion of the pancreatic duct into the CBD (open yellow arrow). **c** Endoscopic retrograde cholangiopan-

creatography (ERCP) clearly showing the PBMJ and ongoing “pancreatobiliary” leak, as demonstrated by contrast extravasation (solid yellow arrow). **d** Endoscopic appearance after biliary sphincterotomy had been performed showing the opening of the pancreatic duct with a stent in situ and the wide opening to the common bile duct (shown by the sphincterotome tip).

A 55-year-old woman underwent supra-pancreatic resection of a large choledochal cyst, Todani type IVA, associated with pancreatobiliary maljunction (PBMJ), Komi type IIb [1] (● Fig. 1 a, b and ● Fig. 2). The pancreatic parenchyma was not incised or cauterized during surgery.

On the first postoperative day, a large amount (500–600 mL) of an amylase and lipase-rich secretion was noted to be draining out of the Jackson-Pratt drain. An endoscopic retrograde cholangiopancreatography (ERCP) was performed to evaluate the pancreatobiliary anatomy,

which confirmed the PBMJ. Pancreatic duct sphincterotomy was performed and was followed by insertion of a 7-Fr pancreatic plastic stent. Despite this therapy, there was persistent drainage of pancreatic enzyme-rich juice (500 mL) through the Jackson-Pratt drain.

A repeat ERCP clearly demonstrated the PBMJ and evidence of ongoing leakage (● Fig. 1 c). Therefore, a biliary sphincterotomy was performed. Close endoscopic inspection after the sphincterotomy clearly demonstrated the opening of the pancreatic duct, which had been previously

stented, and the wide entrance to the common bile duct (● Fig. 1 d). With no sphincters to cause resistance, the pancreatic juice was able to flow freely through the common channel into the duodenum, without regurgitating through the PBMJ into the bile duct stump, and drainage of pancreatic juice through the Jackson-Pratt drain stopped within 24 hours.

Postoperative pancreatic juice leaks are not uncommon after pancreatic surgery. These usually occur because of pancreatic parenchymal injury, transmural burn, dissection or transection of the pancreatic duct, or from the pancreatojejunal anastomosis. However, pancreatic juice leaks in the absence of injury to the pancreas or the pancreatic duct are extremely rare. Our case is interesting as it shows that a “pancreatic duct” leak can occur through the bile duct stump in the absence of injury to the pancreatic duct or parenchyma, as a result of a PBMJ.

Endoscopic therapy consisted of sphincterotomy of both the pancreatic and bile duct sphincters, along with pancreatic duct stenting. Once the bile duct sphincter had been incised, the leak resolved within 2 weeks. Knowledge of this anatomical variant based on the Komi classification is important when dealing with suspected postoperative injury to the pancreas and/or pancreatic duct [1,2].

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**Competing interests:** None

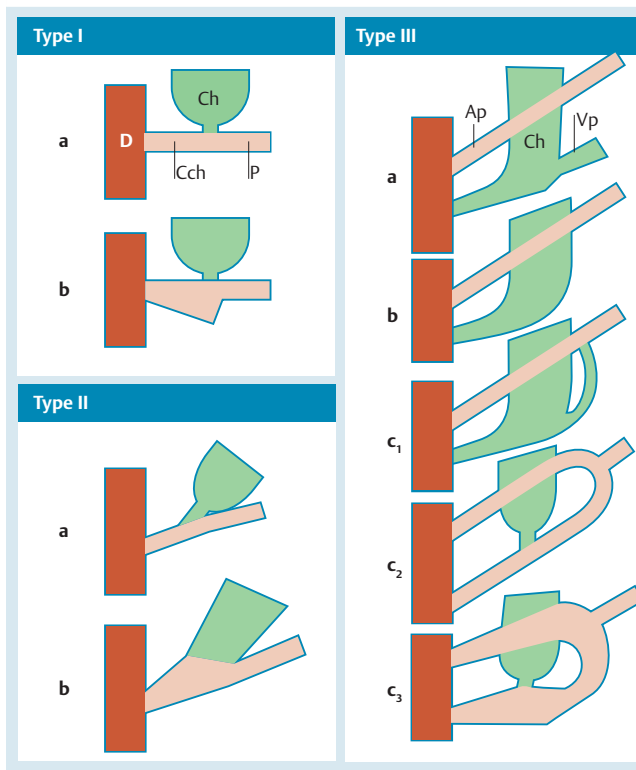
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**Fig. 2** Schematic showing the classification of pancreaticobiliary maljunction (PBMJ), as proposed by Komi. Ap, accessory pancreatic duct; Cch, common channel; Ch, choledochal cyst; D, duodenum; P, pancreatic duct; Vp, ventral pancreatic duct.

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