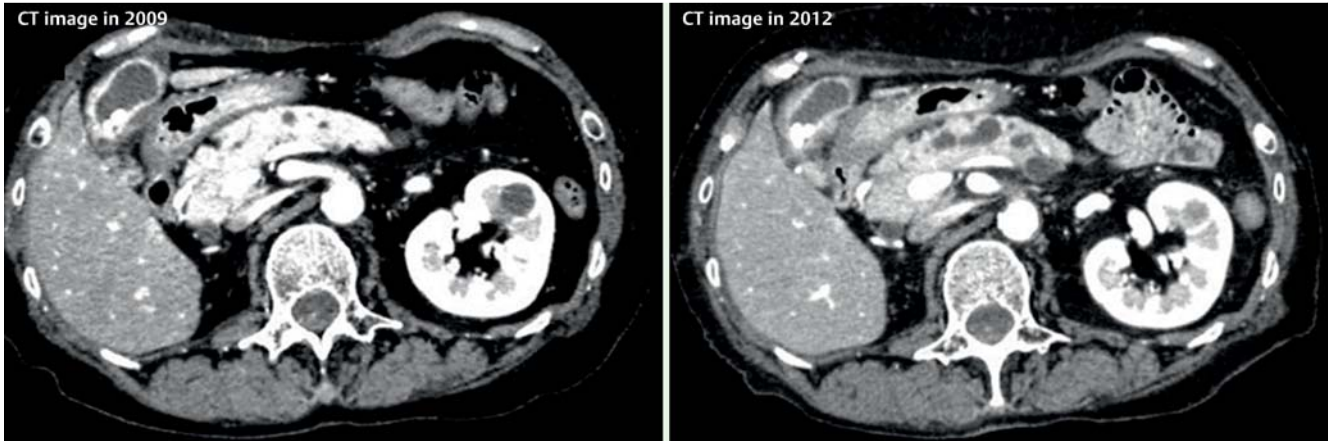
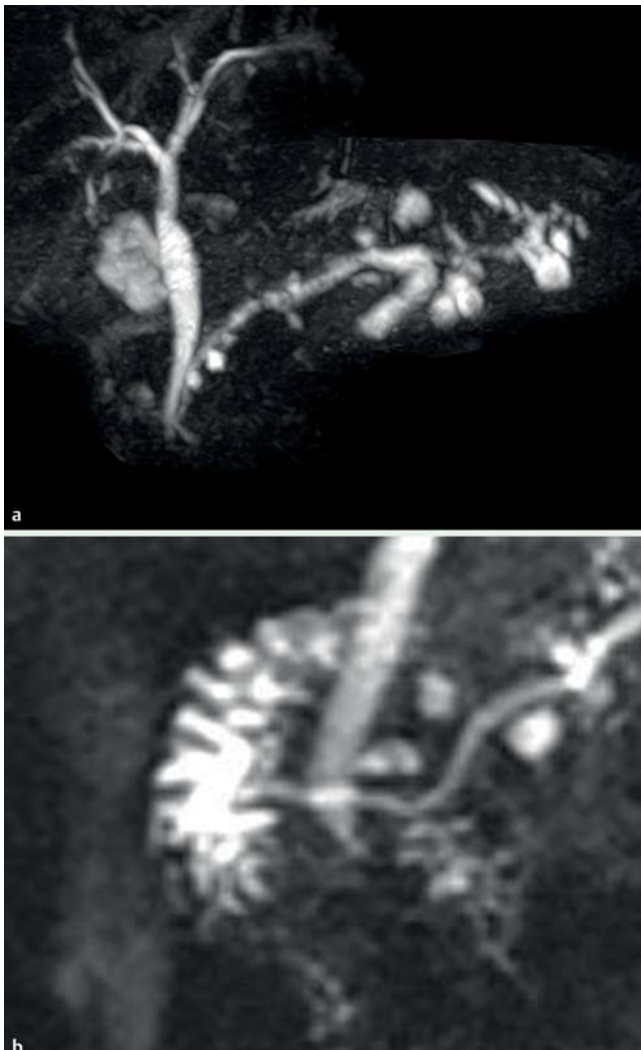


## Complete pancreas divisum with patulous minor papilla complicated by multifocal branch-duct intraductal papillary mucinous neoplasms



**Fig. 1** Computed tomography (CT) images of a Japanese woman with recurrent acute pancreatitis taken in 2009 and in 2012 showing dilatation of the dorsal pancreatic duct and multifocal branch-duct intraductal papillary mucinous neoplasms (BD-IPMNs) that have increased in size during the intervening years.

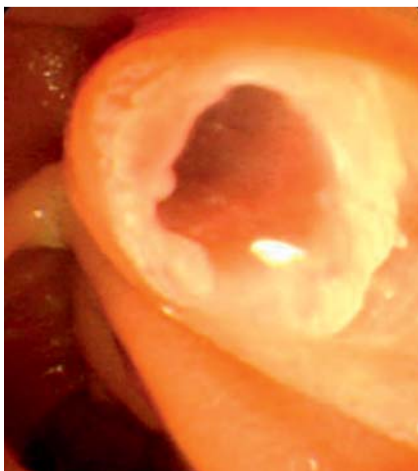


**Fig. 2** Magnetic resonance cholangiopancreatography (MRCP) images showing: **a** the dilatation of the dorsal pancreatic duct and multifocal branch-duct intraductal papillary mucinous neoplasms (BD-IPMNs); **b** no evidence of the duct of Wirsung.

A 70-year-old Japanese woman who did not drink alcohol was admitted for investigation into the cause of her recurrent acute pancreatitis. On admission, an abdominal computed tomography (CT) scan revealed dilatation of the dorsal pancreatic duct and multifocal branch-duct intraductal papillary mucinous neoplasms (BD-IPMNs) that had enlarged relative to images that had been taken 3 years previously (▶ Fig. 1). Magnetic resonance cholangiopancreatography (MRCP) also showed multifocal BD-IPMNs (▶ Fig. 2 a) but could not detect the duct of Wirsung (▶ Fig. 2 b). The largest cyst of the BD-IPMNs was <3 cm and without mural nodules.

Endoscopic retrograde pancreatography was unsuccessful via the major papilla, but successful via the minor papilla. The minor papilla was patulous, with a large amount of mucin being secreted from the orifice (▶ Fig. 3). From these findings, a diagnosis of complete pancreas divisum complicated by multifocal BD-IPMNs was made. A dorsal duct stent was placed via the minor papilla, but was displaced 2 days later, so surgical intervention was required.

Pancreas divisum is the most common congenital variation of pancreatic duct anatomy, arising when the embryological ventral and dorsal endodermal buds fail to fuse. Whether pancreas divisum causes acute or chronic pancreatitis remains



**Fig. 3** Endoscopic appearance of the patulous minor papilla showing a large amount of mucin being secreted from the orifice.

controversial [1,2], but despite this some authors consider dorsal duct obstruction caused by the relative stenosis of the minor papilla to be a factor in the development of pancreatitis [3,4]. In addition, 25%–41% of all BD-IPMNs are multifocal, although their treatment should mirror that of unifocal BD-IPMNs [5].

In this case, it was likely that the recurrent acute pancreatitis was due to the com-

plete pancreas divisum and to the large amount of pancreatic juice being secreted by the enlarging multifocal BD-IPMNs. To the best of our knowledge, this is the first case to be reported in the English literature of complete pancreas divisum complicated by multifocal BD-IPMNs. In addition, we have provided a vivid endoscopic image of the patulous minor papilla secreting a large amount of mucin.

Endoscopy\_UCTN\_Code\_CCL\_1AZ\_2AB

**Competing interests:** None

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**DOI** <http://dx.doi.org/10.1055/s-0033-1344160>  
 Endoscopy 2013; 45: E199–E200  
 © Georg Thieme Verlag KG  
 Stuttgart · New York  
 ISSN 0013-726X

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