

# Annular pancreas intra operatively discovered: a case report

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## Abstract

Annular pancreas is a rare congenital abnormality. This entity can rarely be symptomatic. Patients can present with gastrointestinal obstruction or acute pancreatitis. We report a case with a rich iconography, of an annular pancreas discovered intraoperatively. A 46-year-old woman was operated with the diagnosis of acute cholecystitis with common bile duct stones. At operation, a strip of pancreatic

tissue (2 cm) completely encircled the second duodenum. Open cholecystectomy with choledocotomy and stones extraction was done. Postoperatively, she developed an acute pancreatitis. The post-operative cholangiography showed the annular duct surrounding the second duodenum. Annular pancreas is rare. Symptoms may occur in newborn children. In adults, annular pancreas discovering is radiological or intra operatively.

## Introduction

Annular pancreas is a rare congenital abnormality (1/20,000),<sup>1</sup> which results from the failure of ventral pancreas to rotate with the duodenum during embryogenesis. We report a case, with a rich iconography, of an annular pancreas intra operatively discovered.

## Case Report

A 46-year-old patient was admitted for right abdominal quadrant pain with jaundice. Physical examination found jaundice, no fever and an upper right quadrant pain. Laboratory findings showed a high liver enzymes level and high bilirubin level. The abdominal ultrasound showed a cholecystitis. At operation, a strip of

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Key words: annular pancreas; annular duct; pancreatitis.

Received for publication: 20 September 2011. Accepted for publication: 14 October 2011.

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 Clinics and Practice 2011; 1:e82  
 doi:10.4081/cp.2011.e82

pancreatic tissue (2 cm) completely encircled the second duodenum (Figures 1 and 2). Open cholecystectomy with choledocotomy and stones extraction with irrigation and Dornia clip was done

Post operatively course was complicated by an acute pancreatitis. The post-operative computed tomography (Figure 3) and post-operative cholangiography (Figure 4) confirmed annular pancreas and showed the annular duct surrounding the duodenum and opens into the main pancreatic duct.

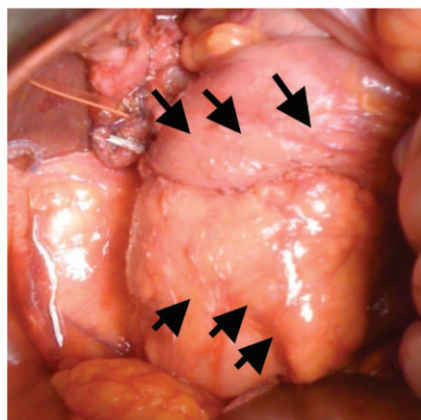


Figure 1. Intra operative view: Pancreatic tissue (arrows) on the anterior side of the duodenum.

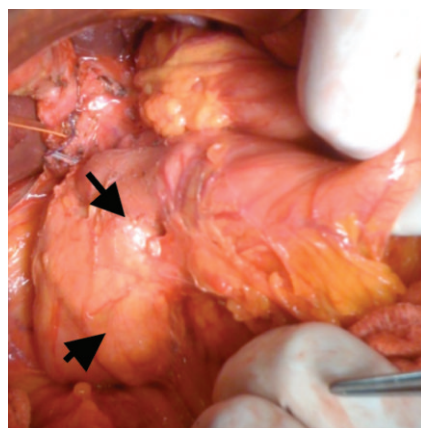


Figure 2. Intra operative view: Pancreatic tissue (arrows) completely surrounding the second duodenum.

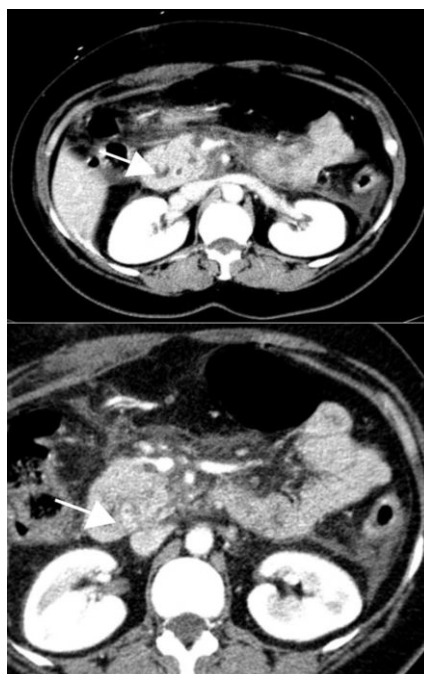


Figure 3. Abdominal computed tomography (showing the duodenal lumen (arrow) into the pancreatic head.

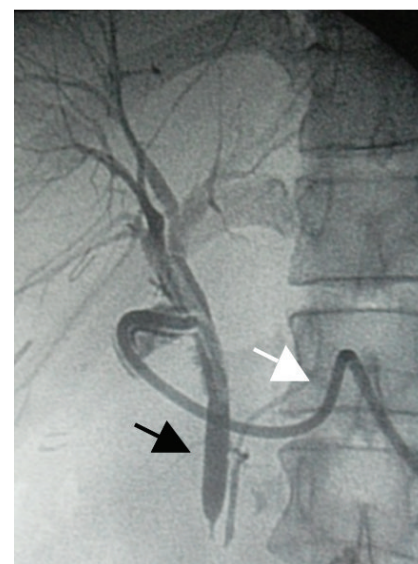


Figure 4. Post-operative endoscopic retrograde cholangiopancreatography: the annular duct (black arrow) surrounding the duodenum. The annular duct opens into the main pancreatic duct (white arrow).

## Discussion

Annular pancreas was described by Ecker in 1862 as pancreatic tissue surrounding the second duodenum.<sup>2</sup> Only in 25% of cases, duodenum is totally encircled by pancreas tissue.<sup>2</sup> This congenital abnormality results from the failure of ventral pancreas to rotate with the duodenum during embryogenesis.<sup>3</sup>

The annular pancreas has a bimodal pattern of presentation; the first peak is in infancy (52%) and a later peak in the fourth decade of life.

Newborn children, with annular pancreas, present a gastrointestinal obstruction or jaundice. The abdominal radiography shows the *double bubble* sign. This congenital abnormality may be associated with other congenital disease in 75% of cases (Down syndrome, oesotracheal fistula, anal imperforation and hirschprung disease).<sup>4</sup> In adults, annular pancreas is generally asymptomatic, discovered radiologically or per operatively. When symptomatic, annular pancreas is associated with acute pancreatitis in 15 to 30% of cases.<sup>5</sup> In our case, annular pancreas may be one of the factors inducing post-operative pancreatitis. This pancreatitis may also be due to an irritation of the Vater's ampulla during the stone extraction maneuver. Peptic ulcer is associated to symptomatic annular

pancreas in 26 to 48% of cases.<sup>5</sup> Annular pancreas is associated with duodenal obstruction in 60%.<sup>2</sup> Jaundice is uncommon in annular pancreas and is not usually a direct result of this situation. In a Japanese study, reviewing 151 annular pancreas, jaundice associated with annular pancreas was observed in 15 cases. It was due to cancer in all of these cases (15 cases).<sup>2,6</sup> Endoscopic ultrasonography can be useful in non-obstructive forms.<sup>4</sup> Magnetic resonance imaging (MRI) is the best exam showing the encirclement of the second duodenum by the pancreas and pancreatic duct going forward the second duodenum.<sup>7</sup>

In few cases, when annular pancreas induces duodenal obstruction, surgical treatment as pancreatic resection or bypass can be indicated.

## Conclusions

Annular pancreas is rare. Symptoms may occur in new born children. In adults, annular pancreas discovering is radiological or intra operatively. Surgical treatment of annular pancreas is indicated only in case of duodenal obstruction.

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