

Portal Annular Pancreas: An Under-Reported Pancreatic Anomaly

Sir,

Portal annular pancreas (PAP) is an uncommon and under-recognized congenital anomaly of the pancreas, which mostly remains asymptomatic but can have serious implications if a pancreatic surgery is being contemplated. In contrast to a conventional annular pancreas in which the pancreatic tissue encircles the second part of the duodenum, portal annular pancreas is characterized by encasement of the portal vein or the superior mesenteric vein (SMV) by a ring of pancreatic parenchyma.^[1-5]

We noted, on an axial abdominal computed tomography study of a 69-year-old female with chronic liver disease, anomalous pancreatic parenchyma encircling the main portal vein [Figure 1a]. Subsequent magnetic resonance imaging (MRI); axial T2-weighted spin echo imaging confirmed these findings and in addition revealed the retroportal course of the main pancreatic duct, that is, the pancreatic duct was seen traversing posterior (white arrow) to the portal vein [Figure 1b].

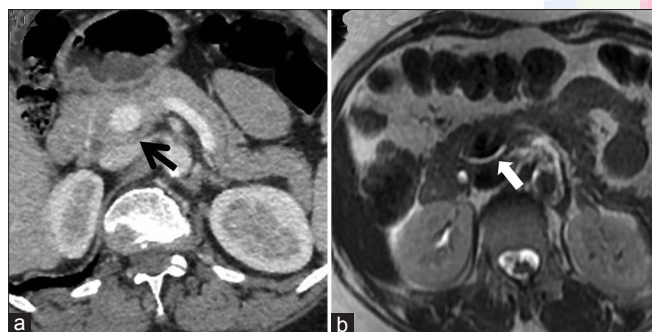


Figure 1: (a) Axial contrast-enhanced abdominal computed tomography scan displays a ring of pancreatic tissue encircling the portal vein consistent with portal annular pancreas. (b) Axial T2-weighted magnetic resonance imaging in addition displays the retroportal main pancreatic duct traversing posterior to the portal vein

The embryogenesis of pancreas is complex. It develops from a ventral and a dorsal bud of the duodenum. The ventral bud forms the major part of the head and the uncinate process, whereas the dorsal bud forms upper part of the head, the body, and tail of the pancreas. The ventral bud rotates posteriorly during the 7th week of gestation to fuse with the dorsal bud so as to form the fully mature gland. Rarely, this fusion occurs to the left of the mesenteric or portal vein, resulting in a ring of pancreatic parenchyma encircling the portal vein.^[4,5] This has been referred to as the portal annular pancreas. Although anticipated to be extremely rare an incidence of 1.14%-2.5% has been reported by Karasaki *et al.* and Ishigami *et al.*, respectively.^[3,5] The authors concluded that the prevalence of portal annular pancreas is not extremely low but is not readily recognized on preoperative imaging due to lack of adequate knowledge and awareness of this uncommon variant.

Imaging plays a pivotal role in the diagnosis of portal annular pancreas and contrast-enhanced multi-detector computed tomography (MDCT) is considered sufficient enough to establish the diagnosis. Joseph *et al.* have classified PAP into 3 types [Figure 2].^[4] In type I the ventral bud of the pancreas fuses with the dorsal bud posterior to the portal vein with a retroportal pancreatic duct (as is seen in the present case); type II has concomitant pancreas divisum; and type III is when the uncinate process alone is involved and the pancreatic duct is seen anterior to the portal vein (anteportal pancreatic duct). MRI, is especially useful for depicting the major as well as the accessory duct systems and thus can aid in differentiating anteportal and retroportal pancreatic duct.^[2]

The clinical importance lies in accurately identifying portal annular pancreas on preoperative imaging, especially in

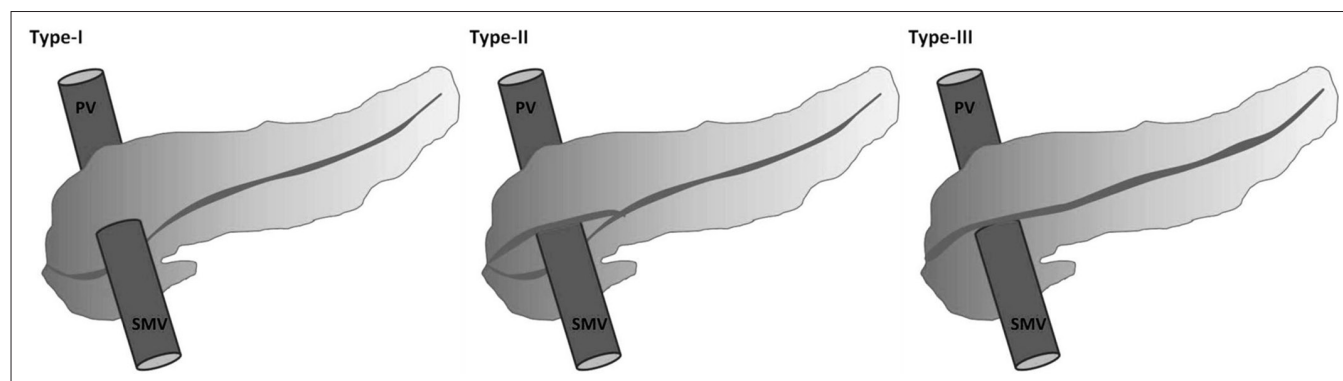


Figure 2: Schematic representation of portal annular pancreas classification proposed by Joseph *et al.*

patients where a pancreatic surgery is being contemplated so as to avert inadvertent pancreatic injury and the attendant risk of postsurgical pancreatic fistula.^[1-5] It is thus imperative to be aware of and carefully search for uncommon pancreatic anomalies, such as portal annular pancreas, in patients planned for pancreatic head resection, so as to avoid and minimize any surgical complications.

**Yashwant Patidar, Ankur Arora, Amar Mukund,
Ankur Dev**

*Departments of Radiodiagnosis, Institute of Liver and Biliary
Sciences, D-1 Vasant Kunj, New Delhi, India
E-mail: aroradrnkur@yahoo.com*

REFERENCES

1. Matsumoto I, Shinzeki M, Fukumoto T, Ku Y. An extremely rare portal annular pancreas for pancreaticoduodenectomy with a special note on the pancreatic duct management in the dorsal pancreas. *Surgery* 2011 [Epub ahead of print].
2. Gonoï W, Akahane M, Akai H, Hagiwara K, Kiryu S, Hayashi N, *et al.* Retroportal main pancreatic duct with circumportal pancreas: Radiographic visualization. *Clin Imaging* 2011;35:442-6.
3. Ishigami K, Tajima T, Nishie A, Asayama Y, Kakihara D, Nakayama T, *et al.* The prevalence of circumportal pancreas as shown by multidetector-row computed tomography. *Insights Imaging* 2011;2:409-14.
4. Joseph P, Raju RS, Vyas FL, Eapen A, Sitaram V. Portal annular pancreas. A rare variant and a new classification. *JOP* 2010;11:453-5.
5. Karasaki H, Mizukami Y, Ishizaki A, Goto J, Yoshikawa D, Kino S, *et al.* Portal annular pancreas, a pancreatic malformation: Frequency, morphology, and implications for pancreatic surgery. *Surgery* 2009;146:515-8.

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10.4103/2006-8808.110272