Treatment of Preduodenal Portal Vein

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Dear Editor,

The patient was a full-term male infant aged three days old, admitted to a secondary care center for bilious vomiting. When he was 11 days old, the pediatrician performed a barium study of the upper gastrointestinal tract that showed a right-sided stomach with signs of intestinal malrotation. At 27 days of life, he was referred to our pediatric emergency center. The patient was hypotonic and dehydrated with hypothermia. The abdomen was not distended or tender.

Abdominal and chest X-ray revealed a right sided stomach, left sided liver and a consolidation of the left lung (Figure 1A). Cardiac ultrasonography demonstrated a situs solitus and blood tests showed a positive sepsis profile; blood urea was raised, serum electrolytes were normal and blood culture was positive for extended-spectrum betalactamase producing Klebsiella. During hospitalization at our unit, non-bilious clear fluid was drained through the nasogastric tube. After ten days of rehydration and antibiotic administration, laparotomy was performed. We found a right-sided stomach and a normally right sided liver on the left, several small spleens were found on the right extremity of the liver, a quiescent intestinal malrotation with peritoneal bands from the cecum to duodenum with gallbladder and a compressive preduodenal portal vein (PDPV), which was crossing the anterior aspect and tracting the first part of the duodenum towards the left (Figure 1B). A transverse duodenotomy in the oral side ruled out an intrinsic obstruction. Ladd’s procedure with peritoneal band and appendectomy was performed. When he was 11 days old, the pediatrician performed a barium study of the upper gastrointestinal tract that showed a right-sided stomach with signs of intestinal malrotation. At 27 days of life, he was referred to our pediatric emergency center. The patient was hypotonic and dehydrated with hypothermia. The abdomen was not distended or tender.

Animal study in rats suggests autosomal recessive inheritance of the PDPV. Anomalies associated with PDPV include biliary atresia, preduodenal common bile duct, cardiovascular malformations and other malformations causing duodenal obstruction (4, 5). Because of the latter, some authors denied the role of low pressure within the PDPV in the compression of the duodenum (6). We think that in the present report not the pressure within the PDPV but its short length led to extrinsic pressure of the duodenum. However, in some cases there is a dilemma to involve the PDPV as an etiology of the duodenal obstruction when other frequent etiologies are present.

The aim of the treatment of duodenal obstruction caused by PDPV is to bypass the vein. Several procedures have been reported: an end to end duodenoduodenostomy leading to a retroduodenal position of the PDPV, gastrojejunostomy, duodenojejunostomy and a loose overbridging duodenoduodenostomy is the procedure of choice to avoid compression of the PDPV blood flow (6-8), but in our report it was impossible to perform this latest procedure with a wide loop and a gastroduodenostomy was the only way to prevent the portal vein from being compressed.

In spite of its rarity, PDPV should be considered in any infant with duodenal obstruction associated with cardiac malformation, dextrocardia and situs inversus (9). Preoperative sonography in these patients may be useful to define the position of the portal vein. Pediatric surgeons must be aware of the existence of PDPV in order to preserve its integrity from accidental damage or thrombosis with serious outcome. Preduodenal portal vein is often symptomless and usually associated with other causes of duodenal obstruction. It is particularly difficult to prove the
involvement of the PDPV in the duodenal obstruction. A careful analysis of symptoms, and surgical findings are the key factors of decision making when surgical treatment of PDPV should be considered.

References

1. Mordehai J, Cohen Z, Kurzbart E, Mares AJ. Preduodenal portal vein causing duodenal obstruction associated with situs inversus, intestinal malrotation, and polysplenia: A case report. J Pediatr Surg. 2002;37(4):5. [PubMed: 11912540].

2. Gray SW, Skandalakis JH. Embryology for surgeons. The embryological basis for treatment of congenital defects. Philadelphia: Saunders; 1972. pp. 177-8.

3. Pathak D, Sarin YK. Congenital duodenal obstruction due to a preduodenal portal vein. Indian J Pediatr. 2006;73(5):423-5. [PubMed: 16741329].

4. Shah OJ, Robbani I, Khuroo MS. Preduodenal portal vein with preduodenal common bile duct: an extremely rare anomaly. Am J Surg. 2009;197(4):43-5. doi: 10.1016/j.amjsurg.2008.04.020. [PubMed: 19178096].

5. Thirumoorthi AS, Cowles RA. Preduodenal portal vein. Surgery. 2016;159(2):672-3. doi: 10.1016/j.surg.2014.08.042. [PubMed: 26395503].

6. Mboyo A, Khadir SK, Guillaume MP, Massicot R, Flurin V, Lalouli A, et al. An exceptional cause of duodenal obstruction detected antenatally: A compressive preduodenal portal vein. J Pediatric Surgery Case Reports. 2013;3(12):420-4. doi: 10.1016/j.epsc.2013.09.01.

7. Choi SO, Park WH. Preduodenal portal vein: a cause of prenatally diagnosed duodenal obstruction. J Pediatr Surg. 1995;30(10):3521-2. [PubMed: 8786512].

8. Wabada S, Abubakar AM, Mustapha B, Pius S, Khalil J, Abana AK. Congenital duodenal obstruction due to duodenal atresia with preduodenal portal vein, annular pancreas, and intestinal malrotation associated with situs inversus abdominis: A case report. J Pediatric Surgery Case Reports. 2015;3(12):545-7. doi: 10.1016/j.epsc.2015.10.012.

9. D’Souza F, Nage A, Bendre P. Preduodenal Portal Vein with Situs Inversus Totalis causing Duodenal Obstruction. APSR J Case Rep. 2016;7(3):24. doi: 10.21693/jacr.2016.1.345. [PubMed: 27398325].