Life and Medical Sciences

A Rare Cause of Congenital Duodenal Obstruction: Preduodenal Portal Vein

Nadir Görülen bir Konjenital Duodenal Obstrüksiyon Nedeni: Preduodenal Portal Ven

Ahmet SARAÇ[1] [ID], Abdishakur MOHAMED ABDI[1] [ID], Shukri SAID MOHAMED[1] [ID], Mesut KAYSE ADAN[1] [ID], Abdullahi YUSUF ALI[1] [ID]

[1]Department of Pediatric Surgery, Mogadishu Somalia-Turkey Recep Tayyip Erdoğan Training and Research Hospital, Mogadishu, Somalia.

Article Info: Received; 12.01.2020. Accepted; 02.02.2020. Published; 02.02.2020.
Correspondence: Ahmet Saraç; MD, Department of Pediatric Surgery, Mogadishu Somalia-Turkey Recep Tayyip Erdoğan Training and Research Hospital, Mogadishu, Somalia. E-mail: drasarac@gmail.com

Cite as: Saraç A, Mohamed Abdi A, Said Mohamed S, Kayse Adan M, Yusuf Ali A. A Rare Cause of Congenital Duodenal Obstruction: Preduodenal Portal Vein. Life Med Sci 2022; 1(1): 33-35.

Abstract

Preduodenal portal vein (PDPV) is a rare cause of duodenal obstruction. While half of PDPV cases present with obstructive findings in the neonatal period, the other half are diagnosed incidentally at advanced ages. In half of the obstructed PDPV cases, the cause of obstruction is another congenital anomaly. In our case, the aberrant ventral extension of the pancreas with PDPV caused incomplete duodenal obstruction by compressing the duodenum externally.

Keywords: Preduodenal portal vein, Congenital duodenal obstruction, Duodenoduodenostomy, Malrotation.

Özet

Preduodenal portal ven (PDPV), duodenal tıkanıklığın nadir bir nedenidir. Yenidoğan döneminde PDPV olgularının yarısı obstrüktif bulgularla ortaya çıkarken, diğer yarısı ileri yaşlarda rastlantısal olarak teşhis edilmektedir. Tıkanmış PDPV vakalarının yarısında, tıkanıklığın nedeni başka bir konjenital anomalidir. Bizim olgumuzda PDPV'ye eşlik eden pankreasın anormal ventral uzantısı duodenuma dıştan bası yaparak inkomplet tıkanıklığa neden olmuştu.

Anahtar Kelimeler: Preduodenal portal ven, Konjenital duodenum obstrüksiyonu, Duodenoduodenostomi, Malrotasyon.

Introduction

Preduodenal portal vein (PDPV) is a very rare anomaly causing duodenal obstruction in the neonatal period and was first described by Knight in 1921 [1-3]. Pathology occurs as a result of the persistence of the vitelline vein that passes in front of the duodenum and obliteration of the branch that passes behind the duodenum [1]. Duodenal incomplete obstruction findings are present in the diagnosis. The definitive diagnosis is usually made intra-operatively [4]. There is usually a congenital anomaly that causes the main obstruction [5-7].

Case Report

A 17-day-old female patient, 2650 gr on term, was admitted to the emergency department

with non-bilious vomiting since birth. The patient had electrolyte imbalance secondary to vomiting, metabolic alkalosis, and decreased turgor and tone. On abdominal X-ray, the stomach was enlarged and there were gas shadows only at the left side. Ultrasonography also showed that the first part of the duodenum was enlarged and the transition to the second part was quite slow.

After correcting the metabolic alkalosis, the patient was operated with a prediagnosis of duodenal incomplete obstruction. The cecum was mobile, but there were no Ladd bands compressing the duodenum. On the first and second parts of the duodenum, there was a PDPV suppressing the duodenal passage and aberrant ventral extension of the pancreas (Figure-1). There was no annular pancreas, but it was observed that the distal duodenum was slightly narrowed due to compression of the portal vein and anterior pancreatic tissue. After the catheter air inflated the first part of the duodenum significantly, it was observed that the air slowly passed distally. The patient underwent duodenoduodenostomy anterior to the portal vein (Figure 2).

Postoperatively, she was fed parenterally with total parenteral nutrition. On the 7th day, the nasogastric catheter was removed and oral feeding began. The patient was discharged on the 12th postoperative day without any problem.

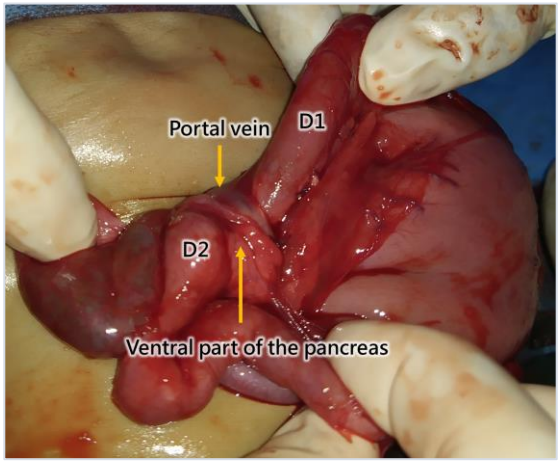

Figure 1: PDPV and the aberrant ventral extension of the pancreas compresses between the first (D1) and second parts of the duodenum (D2).

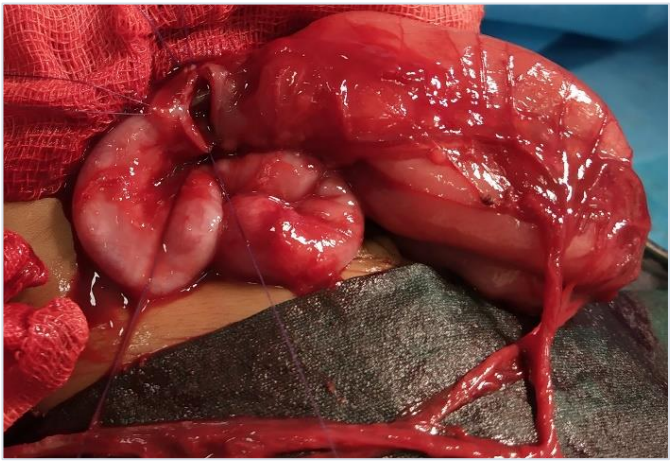

Figure 2: Duodenoduodenostomy anastomosis.

Discussion

Congenital duodenal obstructions are responsible for 50% of intestinal obstructions in the neonatal period with an incidence of 1:2.500-10.000 [8-10]. The causes of obstruction are extrinsic (Ladd bands, annular pancreas, preduodenal portal vein) or intrinsic (atresia, stenosis, web) causes [10-12]. PDPV is responsible for 4% of duodenal obstructions [3]. PDPV presents with obstruction during neonatal and infant period, while half is detected incidentally in advanced ages without any symptoms [13]. In half of PDPV cases presenting with obstruction, there is an additional extrinsic or intrinsic anomaly that causes obstruction [14,15]. In our case, the extension of the ventral part of the pancreas with PDPV was compressing the duodenum. PDPV is often accompanied by cardiovascular, gastrointestinal, and urinary system abnormalities [5-7,16]. Malrotation is associated with %31-54 of the cases [9,14]. In our case, the cecum was mobile but there were no Ladd bands that pressed on the duodenum. The diagnosis of preop is difficult, because PDPV does not have a specific marker. In the antenatal period, a history of polyhydramnios, biliary or non-biliary vomiting after birth, and double bubble appearance on direct radiography suggest a duodenal obstruction. The diagnosis of PDPV is usually made intraoperatively [4]. Treatment of obstructive PDPV, as we do, is duodenoduodenostomy [17]. In cases where this is not possible, gastroduodenostomy or gastrojejunostomy are among the methods. In

the literature, duodenoduodenostomy was not performed in cases where portal vein did not obstruct duodenum [4,18]. Obstruction findings were not observed in the follow-up of these patients [4,18]. PDPV should be considered in cases of incomplete duodenal obstruction to avoid portal vein injury, especially during Ladd band excision. Likewise, the possibility of encountering an asymptomatic PDPV should not be ignored in patients who are scheduled for operation for cholecystectomy, biliary atresia, and liver transplantation [19,20].

Declaration of interest: The authors declare no conflict of interest and alone are responsible for the content and writing of the paper.

This article previously published as: "Somalia Turkey Journal of Medical Science 2020; 1(1): 17-19." Currently, Somalia Turkey Journal of Medical Science *was merged with* Life and Medical Sciences.

References

1. Knight HO. An anomalous portal vein with its surgical dangers. Ann Surg 1921; 74(6): 697-9. [Crossref] [PubMed]

2. Georgacopulo P, Vigi V. Duodenal obstruction due to a preduodenal portal vein in a newborn. J Pediatr Surg 1980; 15(3): 339-40. [Crossref] [PubMed]

3. Grosfeld JL, Rescorla FJ. Duodenal atresia and stenosis: reassessment of treatment and outcome based on antenatal diagnosis, pathologic variance, and long-term follow-up. World J Surg 1993; 17(3): 301-9. [Crossref] [PubMed]

4. Rusu S, Zaghal A, Choudhry MS. Surgical Decision Making in Preduodenal Portal Vein: Report of Two Cases in Neonates. European J Pediatr Surg Rep 2018; 6(1): e40-e42. [Crossref] [PubMed]

5. Wabada S, Abubakar MA, 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. Journal of Pediatric Surgery Case Reports 2015; 3(12): 545-7. [Crossref]

6. Ohno K, Nakamura T, Azuma T, Yoshida T, Hayashi H, Nakahira M, et al. Evaluation of the portal vein after duodenoduodenostomy for congenital duodenal stenosis associated with the preduodenal superior mesenteric vein, situs inversus, polysplenia, and malrotation. J Pediatr Surg 2007; 42(2): 436-9. [Crossref] [PubMed]

7. Kim SH, Cho YH, Kim HY. Preduodenal portal vein: a 3-case series demonstrating varied presentations in infants. J Korean Surg Soc 2013; 85(4): 195-7. [Crossref] [PubMed]

8. Dinamarco B, Gonzaga E, França WM, Parron PLE, Soares PJM. Preduodenal Portal Vein (PDPV): A Very Rare Cause of Duodenum Obstruction. Surgical Science 2017, 8, 493-8. [Crossref]

9. Bailey PV, Tracy TF Jr, Connors RH, Mooney DP, Lewis JE, Weber TR. Congenital duodenal obstruction: a 32-year review. J Pediatr Surg 1993; 28(1): 92-5. [Crossref] [PubMed]

10. Dalla Vecchia LK, Grosfeld JL, West KW, Rescorla FJ, Scherer LR, Engum SA. Intestinal atresia and stenosis: a 25-year experience with 277 cases. Arch Surg 1998; 133(5): 490-6; discussion 496-7. [Crossref] [PubMed]

11. Escobar MA, Ladd AP, Grosfeld JL, West KW, Rescorla FJ, Scherer LR 3rd , Engum SA, Rouse TM, Billimire DF. Duodenal atresia and stenosis: long term follow up over 30 years. J Pediatr Surg 2004; 39(6): 867-71. [Crossref] [PubMed]

12. Mustafawi AR, Hassan ME. Congenital duodenal obstruction in children: a decade's experience. Eur J Pediatr Surg 2008; 18(2): 93-7. [Crossref] [PubMed]

13. Weber WF, Draus JM Jr. Preduodenal Portal Vein: A Rare Cause of Neonatal Bowel Obstruction. Am Surg 2016; 82(9): 775-6. [PubMed]

14. Esscher T. Preduodenal portal vein: A case of intestinal obstruction? J Pediatr Surg 1980; 15(5): 609-12. [Crossref] [PubMed]

15. Fernandes ET, Burton EM, Hixson SD, Hollabaugh RS. Pre-duodenal portal vein: Surgery and radiographic appearance. J Pedatr Surg 1990; 25(12): 1270-2. [Crossref] [PubMed]

16. 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): E5. [Crossref] [PubMed]

17. Applebaum Harry, Lee Steven L, Puapong Devin P. Duodenal atresia and stenosis- annular pancreas, pp: 1399–405. In: Grosfeld JL, Oneill JA, Fonkalsrud EW, Coran AG (eds), Pediatric surgery. 2006, 6th ed., Mosby Elsevier, Philadelphia.

18. Srivastava P, Shaikh M, Mirza B, Jaiman R, Arshad M. Preduodenal Portal Vein Associated with Duodenal Obstruction of other Etiology: A Case Series. J Neonatal Surg 2016; 5(4): 54. [Crossref] [PubMed]

19. Bansal R, Dhillon KS, Kaushal G. Preduodenal portal vein: A recipe for disaster during laparoscopic cholecystectomy. J Minim Access Surg 2019; 15(1): 63-4. [Crossref] [PubMed]

20. Kato H, Usui M, Iizawa Y, Tanemura A, Murata Y, Kuriyama N, et al. Living Donor Liver Transplantation for Biliary Atresia With Severe Preduodenal Portal Vein Stricture: Success and Pitfall of Portal Vein Reconstruction. Transplant Proc 2016; 48(4): 1218-20. [Crossref] [PubMed]