Case Report

A Rare Cause of Sub-Acute Proximal Intestinal Obstruction Due to Annular Pancreas in a Low-Income Setting

Weledji EP (✉), Ngowe MN, Mokake M

Department of Surgery, Faculty of Health Sciences, PO Box 63, S.W. Region, Cameroon.

Abstract

Annular pancreas (AP) is a rare congenital anomaly due to an abnormal fusion between the tip of the ventral pancreatic bud and the duodenum at about the 7th gestational week and usually presents with symptoms due to duodenal obstruction. We here report a case of a 2-year-old girl who presented for investigations of symptoms of a subacute proximal intestinal obstruction. Investigations revealed a partial duodenal obstruction and an exploratory laparotomy showed a partially obstructing annular pancreas for which she underwent a bypass procedure. A precise preoperative diagnosis of annular pancreas can be difficult without computerized tomography (CT) imaging and the diagnosis and surgical management decision may only be made at laparotomy. Children with atypical or mild symptoms of intestinal obstruction associated with failure to thrive should be investigated fully for a mechanical cause.

Keywords: Annular pancreas, duodenum, obstruction, bypass

Correspondence:

Weledji E.P., PO Box 126, Limbe, S.W. Region,Cameroon. Tel: (00237) 99922144 Fax:00237 33332179 E-mail: elroypat@yahoo.co.uk.

Date of submission: 24 Apr, 2013 Date of acceptance: 30 July, 2013

Introduction

Annular pancreas is reported to occur in one of every 20,000 live births (1,2). If obstruction is complete or if ampulla of Vater is involved symptoms are present in the first days of life (2,3). Pre-ampullary duodenal obstruction presenting with non-bilious vomiting occurs commonly and is mostly partial (75%) (4). 2-D ultrasound or specific markers is becoming increasingly important in prenatal diagnosis (4). In the present era, CT imaging should assist in establishing the diagnosis preoperatively and a proper preoperative management can be planned. After evaluation, these patients can be managed safely with surgical bypass of the annulus to restore intestinal continuity (1,2,3,4).

Case Report

A 2-year-old girl presented with repeated a history of recurrent episodes of post-prandial vomiting and flatulence since birth. This was associated with loss of appetite, malnutrition, and a gradual failure to thrive. She was not constipated and occasionally had diarrhoea. She was born at term with no obvious congenital abnormality, and her four siblings are normal. On physical examination she was pale, weak, undernourished with an asthenic habitus and, small for age. She had a distended non-tender upper abdomen with visible and palpable peristalsis. There was no hepatosplenomegaly. No congenital abnormality was noted during physical examination. A plain abdominal X-ray and contrast barium radiography confirmed the obstructed second part of the duodenum with the classical ‘double-bubble sign’ indicating a dilated duodenal bulb and stomach proximal to the obstruction. An abdominal ultrasound scan of the epigastric mass revealed an enlarged gastric pouch, stasis of food, normal pylorus with increased peristaltic movements in the antrum suggesting a stenosis of the second part of the duodenum. The differential diagnosis included a duodenal atresia, a stenosis or a duodenal web (mucosal diaphragm). She

had iron–deficiency anaemia with a haemoglobin level of 9.6 gm/dl. She was optimized for an exploratory laparotomy with intravenous hydration and nasogastric suction.

Laparotomy revealed a dilated stomach, nomal pylorus, dilated first and second part of duodenum. The jejunum and ileum were of normal calibre and exploration of other intraabdominal organs revealed no other congenital anomalies. Following Kocherisation of the duodenum an annular pancreas was seen partially encircling the second part of the duodenum dorsally (Fig. 2a and 2b).

A simple bypass of the obstruction by an antecolic gastro-jejunostomy was performed. The nasogastric tube was left in situ until ileus resolved and enteral feeding was commenced on day 4. She had no postoperative complication and was discharged on day 8.

Discussion

Annular pancreas arises because the ventral pancreatic outgrowth from the primitive bile duct at the point where the latter opens into the duodenum had not completely fused with the larger dorsal outgrowth whilst rotating anticlockwise early in the seventh week of gut development (5). The symptoms in general, depend on the degree of duodenal obstruction. If obstruction is complete or if ampulla of Vater is involved symptoms are present in the first days of life. Pre-ampullary duodenal obstruction presenting with non-bilious vomiting occurs commonly and is mostly partial as observed in this case (3,6). In adults complications such as recurrent pancreatitis, duodenal or gastric ulceration from duodenal stenosis, obstructive jaundice and malignancy may occur (7). It would be easy to establish the diagnosis preoperatively in the present era of the easily available CT scan, and a proper perioperative management planned (8,9). Due to financial constraints, this was not possible with this patient. Following evaluation, these patients can be managed safely with surgical bypass of the annulus to restore intestinal continuity and the prognosis is good (10). The frequently done simple bypass procedures (duodenoduodenostomy, duodenojejunostomy and

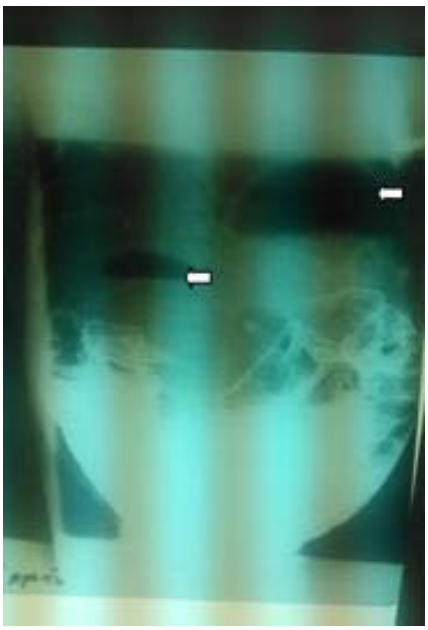
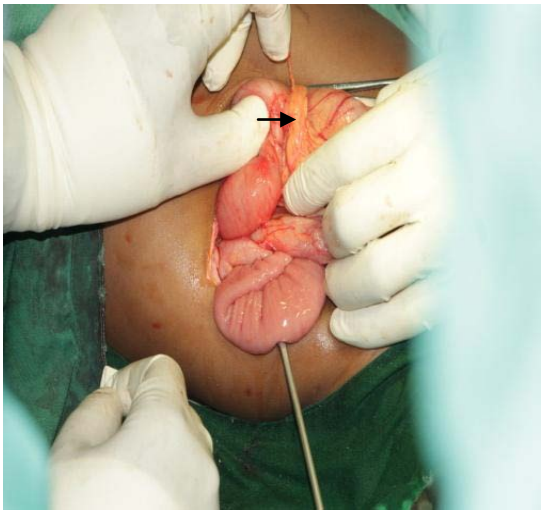
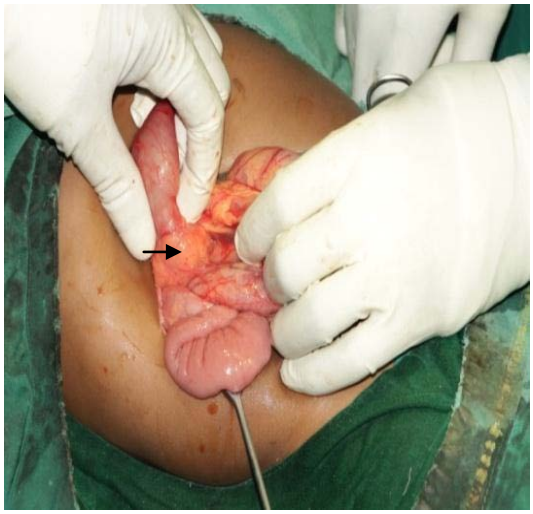


Figure 1: Contrast Barium meal “Double bubble” (white arrows showing a dilated duodenal bulb and stomach).



2(a)



2(b)

Figure 2(a) & (b): Annular pancreas partially obstructing 2nd part of duodenum (black arrows)

gastrenterostomy) have the best results. (1,2,8,11) A gastrojejunostomy was fashioned in this case because of our familiarity with the procedure. Separation of the annular pancreas from the duodenum is associated in 50% of cases with serious complications due to the abnormal proximity of the pancreatic duct (1). Resection is contraindicated because of risk of post operative pancreatitis /fistula, missing a co-existing duodenal web or the erosion of duodenal wall by penetrating annular pancreas (1,5,6,7,8,9,10,11).

Conclusion

Annular pancreas is a recognized cause of partial duodenal obstruction in children and by presenting as a salient less life-threatening diagnosed late. It would seem advisable that a child with recurrent episodes of vomiting, poor feeding accompanied by developmental retardation should be fully investigated for a possible mechanical cause. A precise preoperative diagnosis of annular pancreas can be difficult without computerized tomography (CT) imaging. Surgeons should always keep this rare diagnosis in mind when a patient present with a sub-acute proximal intestinal obstruction. These patients can be managed safely with surgical bypass of the annulus to restore intestinal continuity.

References

1. Ravitch MM, Woods AC. Annular pancreas. Ann Surg 1950; 132(6): 1116-1127.

2. Jimenez JC, Emil S, Podnos Y, Nguyen N. Annular pancreas in children: a recent decade's experience. J Pediatr Surg 2004; 39(11): 1654-1657.

3. Hays DM, Greaney EM, Hill JT. Annular Pancreas as a cause of acute neonatal duodenal obstruction. Ann Surg 1961; 153(1): 103-112.

4. Dankovcik R, Jirasek J, Kucera E, Feyereisl J, Radonak J, Dudas M. Prenatal diagnosis of annular pancreas: reliability of the double bubble sign with periduodenal hyperechogenic band. Fetal Diagn Ther 2008; 24(4): 483–490.

5. Paraskevas G, Papaziogas B, Lazaridis C, Gigis P, Papaziogas T. Annular pancreas in adults: embryological development, morphology and clinical significance. Surg Radiol Anat 2001; 23(6): 437-442.

6. Ettinger J, Spierer E, Fraleigh JP. Partial duodenal obstruction secondary to annular pancreas. Calif Med 1957; 87(5): 321–323.

7. Zyromski NJ, Sandoval JA, Pitt HA, et al. Annular pancreas: dramatic differences between children and adults. J Am Coll Surg 2008; 206(5): 1019-1025.

8. Sandrasegran K, Patel A, Fogel E, Zyrmoski N, Pitt HA. Annular pancreas in Adults. AJR Am J Roentgenol 2009; 193(2): 455-460.

9. Ridout A, Lakhoo K. Annular pancreas. In: Paediatric surgery. A comprehensive text for Africa. Ed JC Jimenez. Alexandria: Global-help publication, 2004, pp-491-493

10. Lin YT, Chang MH, Hsu HY, Lai HS, Chen CC.. A follow-up study of annular pancreas in infants and children. Zhonghua Min Guo Xiao Er Ke Yi Xue Hui Za Zhi 1998; 39(2): 89-93.

11. De Ugarte DA, Dutson EP, Hiyama DT. Annular pancreas in the adult: management with laparoscopic gastrojejunostomy. Am Surg 2006; 72(1): 71-73.