

## Case Report

**Annular Pancreas Producing Duodenal Obstruction: A Case Report****\*Dr S. Sethi<sup>1</sup>, Dr B. Nembian Raja Rajan<sup>2</sup>**<sup>1,2</sup> Department of General Surgery, SCBMCH Cuttack, India**\*Corresponding author**

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**Abstract:** Annular pancreas is a rare congenital anomaly characterized by the presence of ectopic pancreatic tissue surrounding the duodenum. This manifestation results from failure of ventral pancreatic bud during normal migration during development [Duodenal ulcer in 1<sup>st</sup> part of duodenum, duodenal stenosis in between 1<sup>st</sup> and 2<sup>nd</sup> part of duodenum]. This malformation is usually asymptomatic in adults, but can manifest as pancreatitis, duodenal stenosis, or obstruction or duodenal or gastric ulceration. We report the case of a young patient of 25 years old hospitalized for epigastric pain and vomiting for 5 years, in whom radiological investigations showed an annular pancreas. At operation a complete obstruction of the duodenum between its 1<sup>st</sup> and 2<sup>nd</sup> parts was found, caused by an annular pancreas. No other congenital anomaly of the intraabdominal organs was noted. A TV & gastro-enterostomy (G-J) was performed. Both the rarity of this congenital abnormality and its successful correction by surgical means has promoted us to make the following presentation.

**Keywords:** Annular Pancreas; Duodenal Stenosis; Gastro enterostomy.

**INTRODUCTION**

Annular pancreas is a rare congenital anomaly of the pancreatic ducts [1]. This anomaly is due to incomplete rotation of ventral pancreatic bud. Usually manifest in paediatric population and can remain asymptomatic in adult patients for whole life. Annular pancreas is diagnosed with nearly equal frequency in children and adults [2]. The factors initiating symptoms are recurrent pancreatitis, duodenal stenosis, and duodenal or gastric ulceration [3]. One rare case of duodenal obstruction due to annular pancreas is presented.

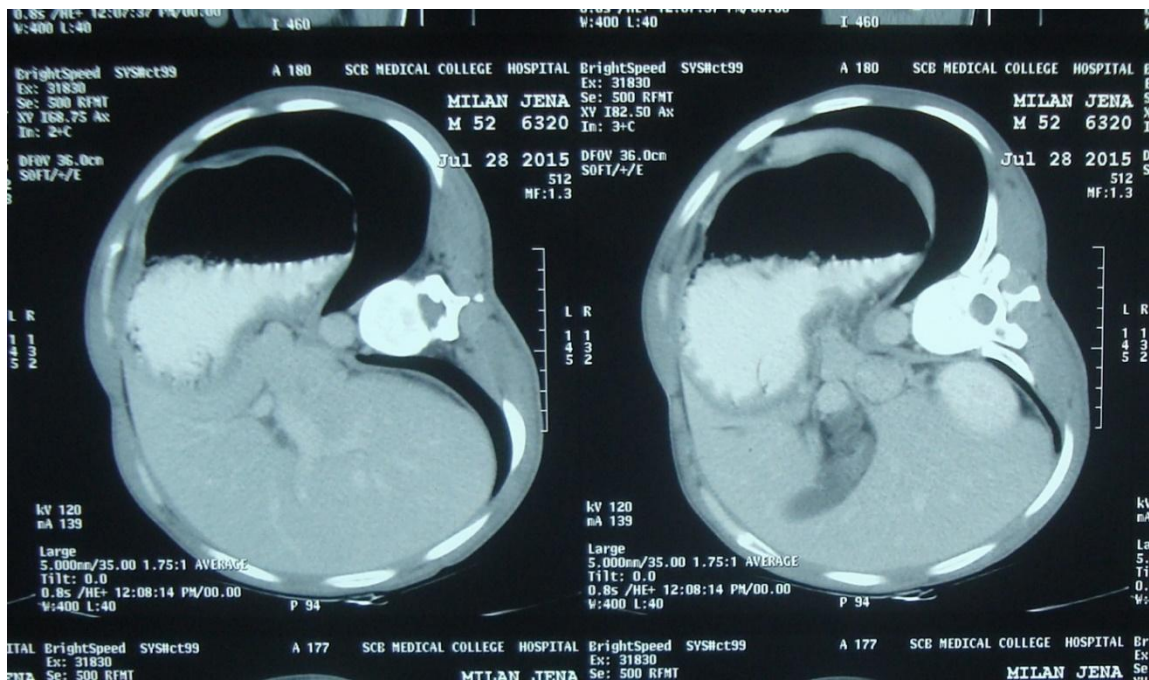
**CASE REPORT**

A 25 years old man presented with a history of recurrent attacks of epigastric pain, nausea and vomiting. The symptoms had been presented for more than 5 years, but had become more frequent in the last few months. End viewing endoscopy revealed narrowing of lumen between D1 & D2 and grade 2 esophagitis and active D1 ulcer. There was narrowing of second part of the duodenum which could not be

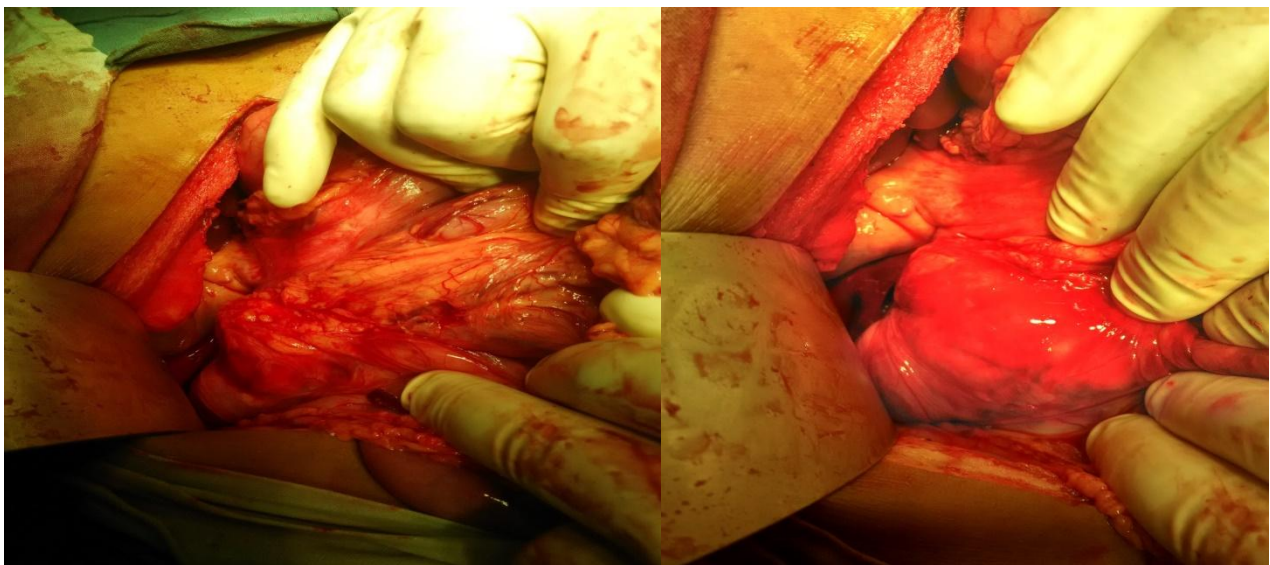
negotiated. Computed tomography (CECT) scanning showed constricting ring encircling the second part of duodenum arising from pancreas probably annular pancreas encircling the second part of the duodenum (figure 1). USG revealed gastric outlet obstruction with grossly dilated stomach.

The patient was taken up for laparotomy. Intraoperative finding revealed hugely dilated stomach. This dilatation extended downward to the first of part of duodenum, which was markedly constricted by a ring of pancreatic tissue which completely surrounded the second part of duodenum and which was continuous with the head of pancreas.

No other congenital anomaly of the intraabdominal organs was noted. A TV & gastro-jejunostomy was performed without technical difficulty. The patient made an excellent recovery, and he was discharged from hospital 4 days later. He remains in good general health 1 year after the surgery. Ct report: second part of duodenum completely surrounded by head of pancreas (? ANNULAR PANCREAS).



**Fig 1: Computerized tomography of abdomen showing the annular pancreas encircling the 2<sup>nd</sup> part of the duodenum.**



**Fig 2: Intra-operative photographs showing an annular ring of pancreatic tissue around the duodenum.**

**DISCUSSION**

Annular pancreas was first discovered by Tiedman in 1818 [4], & named by Ecker in 1862 [5]. Only 737 cases of annular pancreas have been reported in the literature [1]. It is a rare congenital anomaly of the pancreatic ducts after pancreas divisum [2]. Three developmental theories explain the formation of an annular pancreas. Baldwin in 1910 suggested that there was a failure of atrophy of the left component of the ventral pancreatic anlage which maintains a true ventral connection [2]. Lecco's theory suggests that the ventral pancreas adhered to surrounding tissues at its site of origin in the ventral mesogastrium maintaining a true ventral connection [6]. The third theory, explained by Verga in 1972 [7], suggests that the primary

abnormality is duodenal with the pancreas "filling the space" around a narrowed duodenum. This results in a complete or incomplete stenosis of the duodenal lumen.

It has been estimated that only about 33% of the cases are symptomatic [3]. In children, annular pancreas appears most often in the first weeks of life by symptoms related to duodenal stenosis [2]; and other associated congenital malformations have been reported like common mesentery, heart defects, Down syndrome (Trisomy 21), imperforate anus, or tracheoesophageal malformations [2]. In adults, the revelations are usually between 20 and 50 years. The most frequently found symptoms are: abdominal pain (70%), vomiting and nausea (47%), and they are generally reflecting a

proximal intestinal obstruction [8]. Other clinical manifestations have been reported: peptic ulcer secondary to stasis upstream of duodenal stenosis, acute or chronic pancreatitis due to the default flow of pancreatic secretions in the annular pancreas, and the jaundice due to the common bile duct stenosis by the annular pancreas or related to the lithiasic origin [2, 8]. The diagnosis of annular pancreas used to be based on duodeno graphy which showed a duodenal stenosis corresponding to the pancreatic ring [8]. Nowadays, CT scan allows us to see the pancreatic ring encircling the duodenum [2]. The Echo endoscopy also allows approaching the diagnosis by showing the ring of normal pancreatic tissue encircling the duodenum. ERCP can also make the diagnosis, but it remains invasive and impossible in case of an uncrossable stenosis of the duodenal lumen [9]. The treatment of annular pancreas is surgical. Its aim is relief of the duodenal obstruction. For this, there are various procedures being used. Initially it's been treated by dividing or removing a portion of the annular pancreas which lead to pancreatic or duodenal fistula which is very hazardous [1, 10]. Furthermore, the division of annular pancreas is often followed by persistent symptoms, particularly abdominal pain (Upto 50% of cases) [10]. On the other side, the majority of surgeons have elected to bypass the obstruction by establishing a duodenostomy, gastrojejunostomy, or a duodeno-jejunal anastomosis with Roux en y loop [3, 10]. The frequent association of the peptic ulcer and the risk of anastomotic ulcer suggest the need for a procedure like vagotomy which reduces acid secretion by the stomach. Thus from available evidence it appears corrective operations for annular pancreas should include vagotomy and gastro jejunostomy and avoid the duodenum and the annular pancreas [10].

## CONCLUSION

Annular pancreas is a rare malformation that manifests itself primarily by signs related to duodenal stenosis. The diagnosis is currently based on abdominal CT scan and MRI of the pancreas. Treatment is exclusively surgical, and a by-passing procedure is the method of choice in the treatment of annular pancreas producing duodenal obstruction. Both the rarity of this congenital abnormality and its successful correction by surgical means has prompted us to make this presentation.

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