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Original Research Paper

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RETROCOLIC ISOPERISTALTIC DUODENOJEJUNOSTOMY FOR THE MANAGEMENT OF DUODENAL OBSTRUCTION IN ANNULAR PANCREAS: A CASE REPORT

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ABSTRACT

Introduction: Annulare pancreas is a rare anomaly and an extrinsic cause of duodenal obstruction requiring surgery.

Case Report: We present a neonate with symptoms of intestinal obstruction and consequent surgical management for annular pancreas.

Discussion: The cause, associations and surgical options for annulare pancreas are discussed.

Conclusion: CT and upper GI contrast studies preoperatively and visualisation of constricting ring intraoperatively clinches the diagnosis.

KEYWORDS : Annular pancreas, double bubble,duodenojejunostomy

INTRODUCTION

Annular Pancreas (AP) is a rare congenital anomaly. It is an extrinsic cause of duodenal obstruction. A collar or ring of tissue surrounds the second part of the duodenum obstructing it partially or completely [1]. Antenatal USG reveals a 'double bubble' suggesting duodenal obstruction though a focused examination of the area around the distended gastrod uodenum using high resolution ultrasound equipment would be required to visualise hyperechogenic bands and clinch the diagnosis [2]. Postnatal abdominal films revealing distended gastroduodenum are non specific and CT scan or upper GI contrast study may be used for its detection. If the patient is taken for emergency surgical intervention for intestinal obstruction without extensive radiological investigations, the diagnosis is obtained intraoperatively. Though being a congenital malformation, many cases are diagnosed in adults when they present with recurrent pancreatitis or obstructive symptoms [3]. Bypassing the obstruction by gastrojejunostomy or duodenojejunostomy is the desired procedure of choice. We present a neonate with clinical manifestations of intestinal obstruction diagnosed intraoperatively as annular pancreas managed by retrocolic isoperistaltic duodenojejunostomy.

Case Report

A two days old female child is presented to the neonatal emergency with features of abdominal distension and nonbilious vomiting of ingested contents. Patient was vitally stable on admission. The antenatal and perinatal course had been uneventful. Antenatal USG was suggestive of polyhydroamnios and duodenal obstruction though high resolution sonography of the gastroduodenum was not performed. On examination the baby had external features suggestive of Down syndrome. A two dimensional echocardiography revealed a patent foramen ovale with a left to right flow. Abdominal x ray revealed the classic 'double bubble' sign as seen in the image.

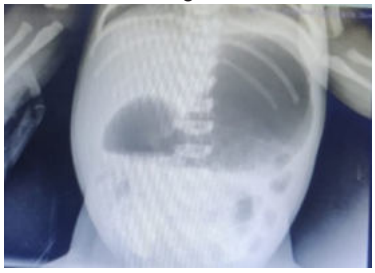

Fig 1: Abdominal film showing 'double bubble' sign

Due to its higher association with Down syndrome, a presumptive diagnosis of Duodenal Atresia was made. The baby was taken for emergency laparotomy under general anesthesia. The bowel loops were examined. Duodenum was mobilised. There was marked distension of the first part of duodenum. Presence of pancreatic tissue was identified forming a ring like constriction around the second part of duodenum and annular pancreas confirmed. Decision was made to bypass the obstruction. Isoperistaltic loop of jejunum was lifted up behind the transverse colon by creating a defect in mesocolon. Incision was taken over the duodenum and jejunal loops and anterior and posterior walls sutured forming a side to side anastomosis with absorbable sutures. The suture line was buried under a seromuscular layer followed by drain placement and abdominal wall closure.

Fig 2: Ring of pancreatic tissue constricting duodenum with dilated segment proximal to ring

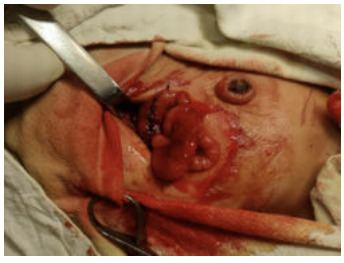

Fig 3: Completion of duodenojejunal anastomosis

Following an uneventful intraoperative period, the baby was shifted to the neonatal intensive care unit where adequate fluid resuscitation and ventilator support was continued. Antibiotics were stepped up followed by extubation. There were no complications in the postoperative period. Drain was removed after resumption of feeding. The baby was discharged after few days of observation.

DISCUSSION

The pancreas develops from a single dorsal and two ventral

buds that first appear in the fifth week of gestation as outgrowths of the primitive foregut. The two ventral buds rapidly fuse. The ventral bud forms the inferior part of the uncinate process and the inferior head of the pancreas, and the dorsal bud gives rise to the tail,body, neck and superior part of the head of pancreas. By the seventh gestational week, expansion of the duodenum causes the ventral bud to rotate and pass behind the duodenum from right to left and fuse with the dorsal bud. Fusion of the ducts of the two buds produces the main pancreatic duct. Annular pancreas results from failure of the ventral bud to rotate with the duodenum, resulting in formation of a pancreatic ring around the duodenum.It is estimated to occur in 1 out of 12000 to 15000 newborns [4]. Annular pancreas may be associated with Down syndrome in 25% of patients. Though most cases of annular pancreas are asymptomatic, duodenal obstruction correlates strongly with Down syndrome [5]. The other associated conditions are duodenal atresia and intestinal malrotation.

Surgical bypass is preferred over division of the pancreatic tissue. The reason for this is that annular pancreas has a pancreatic duct and its division will lead to pancreatic fistula formation. There is also a risk of pancreatitis and a poor outcome due to incomplete relief of obstruction. Duodenojejunostomy or gastrojejunostomy using is operistaltic jejunal segments are most commonly done but procedures like duodenoduodenostomy with or without tapering enteroplasty or placement of transanastomotic jejunal tubes have also been reported[6]. Isoperistaltic approach leads to decreased stasis and faster emptying although antiperistaltic loops may be used in patients with rapid intestinal transit. Retrocolic approach has a lower incidence of afferent loop syndrome complications.

Annular pancreas was first described by Tiedemann in 1818 as a disorder that manifests in children. Over the years it was increasingly recognised as an important cause of persistent gastrointestinal problems in adults. A 1972 study by Thomford NR et al suggested that as annular pancreas in adults is commonly complicated by gastric and duodenal ulcers, gastrojejunostomy with vagotomy provides the best possible outcome [7].

CONCLUSION

Annular pancreas, like duodenal atresia may present with a double bubble sign on antenatal USG and plain abdominal films therefore preoperative diagnosis should be done by CT or upper GI contrast study. Intraoperatively, diagnosis is made by visualising a constricting pancreatic ring of tissue around the second part of duodenum. Management is by duodenojejunosotomy which is usually done by lifting an isoperistaltic jejunal segment behind the transverse colon.

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