Case Report

Pyloric web : Management of a neglected case of Gastric Outlet Obstruction

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ABSTRACT

Pyloric atresia is an extremely rare cause of gastric outlet obstruction, constituting approximately 1% of all gastrointestinal atresias and occurring in about 1 in 100,000 live births. It is equally prevalent in males and females and may exhibit autosomal recessive inheritance. Clinically, it presents during infancy with non-bilious vomiting, abdominal distension, and failure to thrive. Type 1 pyloric atresia, characterized by a pyloric membrane with an opening, is exceptionally rare and may present later in childhood.We reported the case of a 5-year-old male with the history of recurrent non-bilious vomiting since the age of one year, which worsened over the preceding four months. Examination revealed visible peristalsis and upper abdominal fullness. Radiological findings suggested gastric outlet obstruction, and exploratory laparotomy confirmed Type 1 pyloric atresia. Surgical management involved excision of the pyloric web and Heineke-Mikulicz pyloroplasty. The child had an uneventful recovery and demonstrated significant improvement in weight and nutritional status at a 6-month follow-up.The diagnosis of pyloric atresia is challenging due to its rarity and similarity to other conditions like duodenal atresia or hypertrophic pyloric stenosis. Early diagnosis through clinical suspicion, radiological evaluation, and definitive surgical intervention is crucial to prevent complications such as aspiration pneumonia and metabolic imbalances. This case highlights the importance of considering pyloric atresia in children with recurrent vomiting and failure to thrive, even beyond infancy, and emphasizes the significance of prompt surgical management for favorable outcomes.

Key words: Gastric Outlet Obstruction, Pyloric Atresia, Pyloric web, Non-Bilious vomiting, Heineke-Mikulicz Pyloroplasty.

Pyloric atresia, a rare form of Gastric Outlet Obstruction (GOO), was initially described by Calder in 1749. The first successful surgical intervention for pyloric atresia was performed by Touroff, Sussman, and Meltz in 1940. Since then, the understanding of pyloric atresia has evolved, and it is now known to constitute approximately 1% of all reported gastrointestinal atresia. It has an incidence of roughly 1 in 100,000 live births and affects both males and females equally. Familial occurrence of pyloric atresia has been reported, suggesting the possibility of an autosomal recessive transmission. Duodenal and pyloric atresia result from abnormal recanalization during development, unlike other intestinal atresias caused by vascular insults leading to ischemia, necrosis, and segmental resorption. Pyloric atresia typically occurs during infancy, characterized by non-bilious vomiting and in rare instances with failure to thrive.

Type 1 pyloric web with a hole can have a delayed presentation but is extremely uncommon. Duodenal and pyloric atresia clinically resemble multiple conditions. Non-bilious emesis in neonates may result from medical issues like feed intolerance, milk allergy, raised intracranial pressure, sepsis, or necrotizing enterocolitis. Surgical differentials include vascular rings, gastric atresia, gastric volvulus, or preampullary duodenal obstruction, highlighting the need for careful diagnostic evaluation.We reported a case of preschool-aged child diagnosed with type 1 pyloric atresia and the management approach for this condition.

CASE REPORT

A 5-year-old male presented with repeated epsiodes of non-bilious vomiting since 1 year of age with an average of 2-3 episodes per day. The symptoms have worsened for 4 months before presentation and associated with failure to thrive (< 50th centile). The mother noticed fullness in the left upper quadrant and observed peristalsis from left to right. On examination, the child was active and alert. Per abdomen examination revealed fullness in the upper abdomen and visible peristalsis from left to right. X-ray abdomen revealed distended stomach with distal bowel gas. Ultrasound abdomen

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was inconclusive. Evaluation with upper gastrointestinal contrast study showed grossly distended stomach crossing the midline with hindering at the pyloric region and delayed passage of contrast material through the distal bowel - suggestive of gastric outlet obstruction [Fig-1 and 2]. After the proper resuscitation and optimisation of the patient, exploratory laparotomy was performed. The intraoperative findings revealed a grossly distended stomach [Fig-3] with normal duodenum and jejunum.

A gastrostomy was done with 12 F Foley catheter and passed across the obstructed pylorus until reaching the duodenojejunal junction. While retracting the inflated Foley's bulb, it became evident that there was resistance / obstruction at the level of the pylorus. Pyloric web excision followed by Heineke-Mikulicz pyloroplasty was done.The postoperative recovery was uneventful. The child was on full oral feeds by post operative day 3 and showed good tolerance with no episodes of vomiting and was discharged on the 5th post-operative day. At 6 months follow up, child is thriving well, and weight gain of 2.7 kgs was observed.

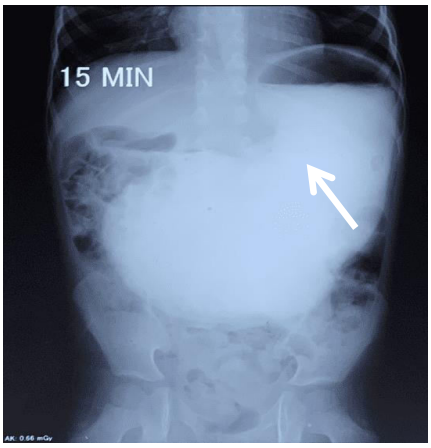

Fig 1 : Contrast study showing dilated stomach(white arrow) in a case of pyloric web with a hole.

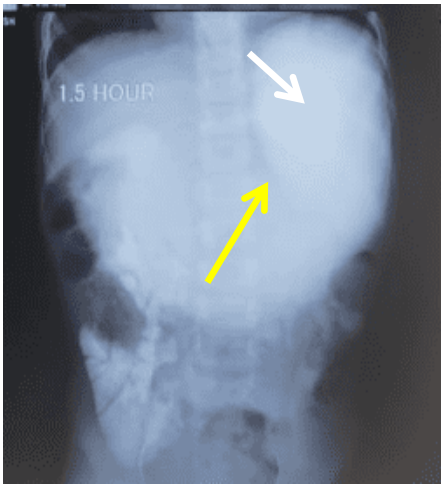

Fig 2 : Contrast study showing dilated stomach(white arrow) with contrast passing into distal bowel (Yellow arrow).

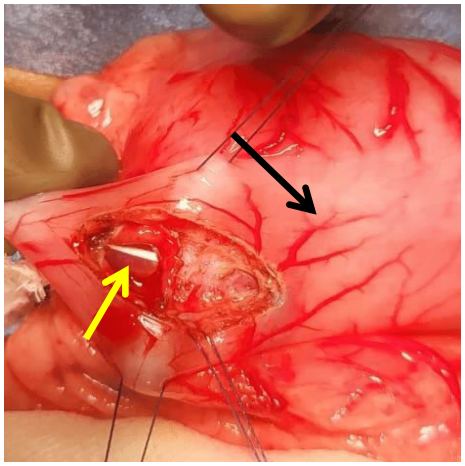

Fig 3 : Intra-operative image showing Dilated stomach (black arrow) Pyloric web with central hole(yellow arrow).

DISCUSSION

Pyloric atresia is a uncommon entity of intestinal obstruction in children. The cause of the disease is not well understood, but several theories have been proposed, including genetic susceptibility, embryonic vascular damage, and recanalization[1, 2]. Ilce *et al* exhibited a notable feature of familial occurrence in their case series[3]. Pyloric atresia is closely associated with epidermolysis bullosa which has a known genetic basis[4]. Pyloric atresia is anatomically categorized into three types. Type 1 involves the presence of a pyloric membrane or web, Type 2 consists of a solid cord connecting the stomach and duodenum, and Type 3 presents a gap between the stomach and duodenum. Type 1 is the most commonly observed[3,5]. The majority of cases are diagnosed in neonatal life and very rarely can be detected prenatally.

The antenatal diagnosis of pyloric atresia is suspected in the presence of polyhydramnios, a dilated stomach, and narrowing of the gastric outlet on prenatal ultrasound. Newborn presents with nonbilious vomiting, failure to thrive, distension of the abdomen predominantly in the left upper quadrant, or peristalsis from left to right in the upper abdomen. However, as it is uncommon, it can be mistakenly attributed to duodenal atresia or gastroesophageal reflux in newborns, leading to delayed diagnosis. These delays can result in complications such as aspiration pneumonia, recurrent lung infections, septicemia, metabolic issues, and gastric perforation. In severe cases, these complications may lead to death. The rarity of this condition along with lack of awareness about its symptoms and limited access to healthcare facilities can contribute to delays in diagnosis and treatment. In children with pyloric web with opening can have delayed symptoms and potentially present during preschool age, as observed in our case.

Based on the patient's clinical history and examination findings eventhough rare, diagnosis of pyloric atresia should be considered. While considering the differential diagnosis of pyloric atresia, it is crucial to also consider other surgical

conditions like infantile hypertrophic pyloric stenosis, pyloric duplication, gastric volvulus, aberrant pancreatic tissue obstructing the pylorus, double pylorus, and retrograde duodeno-gastric intussusception. Diagnostic imaging with a plain radiograph of the abdomen may reveal a single bubble, indicating the presence of pyloric atresia when there is no air beyond the pylorus[6]. In cases where there is suspicion of a web causing gastric outlet obstruction, radiographs may show stomach distension along with air distal to the pylorus[6]. For definitive confirmation, an upper gastrointestinal contrast study or upper gastrointestinal endoscopy are reliable .Pyloric atresia is typically treated with surgical intervention. The specific surgical approach chosen depends on the type of pyloric atresia present.

For Type 1, the recommended procedure involves removing the web and performing a Heineke's Mikulicz pyloroplasty. In cases of Type 2, options include excising the pylorus and performing a Gastrodudenostomy or following Dessanti et al's technique of reconstructing the pyloric sphincter through "gastroduodenal mucosal advancement anastomosis[7]. For Type 3 cases, Gastrodudenostomy is performed as standard procedure .The endoscopic treatment is not clear for PA, but it may be considered for antral web when endoscopic intervention is available. If the mucosal structure of the antral web is uniform without major vessels or muscular or serosal layers and the membrane is tense and consistent with perpendicular insertion, then endoscopic transection is possible[8].

CONCLUSION

Gastric outflow obstruction caused by a pyloric web in a young child is uncommon, clinical suspicion is the key for early diagnosis and better results. A simple diagnostic tool such as a plain X-ray abdomen plays a crucial role. Surgery remains the primary treatment modality.

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