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Case Report

Polya partial gastrectomy for megaduodenum: A case report

Abu Saleh Md. Oli Ullah

Department of Paediatric Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh

Correspondence to: Dr. Abu Saleh Md. Oli Ullah, Email: walisaleh@gmail.com

ABSTRACT

Megaduodenum is an extremely rare condition in children presenting with features of duodenal obstruction. It may be associated with bands and adhesions. However, when the obstruction is chronic and functional, mere excision of the band and adhesionolysis is not curative. Some form of bypass procedure is required for its successful treatment. Here we are describing polya partial gastrectomy in a 13-year-old girl suffering from megadoudenum for its successful treatment.

Keywords: duodenal obstruction, megaduodenum, polya partial gastrectomy

INTRODUCTION

Functional chronic duodenal obstruction of megaduodenum in children is an extremely rare congenital disease.[1] Here, we report a 13-year-old girl presenting with features of subacute duodenal obstruction due to the megaduodenum. Initially, we treated her with the excision of an apparently obstructing fibrous band across the duodenojejunal flexure. However, her subacute duodenal obstruction features persisted. Consequently, we performed a polya partial gastrectomy which cured her. Here, we shared the success story that the medical community may find useful.

CASE DESCRIPTION

KA, a 13-year-old girl born to non-consanguineous parent repeatedly got admitted and treated for recurrent episodes of subacute upper gastrointestinal obstruction in a local hospital for over two months, since 6 May 2021. Each time, her condition improved with conservative treatment. However, episodes persisted.

On 7 July 2021, she was thus admitted to the Department of Paediatric Surgery at Bangabandhu Sheikh Mujib Medical University. She lost 10 kilograms of weight. She looked emaciated and moderately dehydrated. Her abdomen was full in the epigastric and umbilical region with visible peristalsis. It was non-tender. Neither organomegaly nor any other abnormal mass was present. Hernial orifices were intact. Succussion splash was prominent. Bowel sound was normal. No abnormality was found on the heart and lung examination. Her pulse rate was 100 beats/ min. She was pale but afebrile, anicteric, and normotensive. Ankle oedema was absent. Vomitus was bilious and copious. Our provisional diagnosis was subacute incomplete duodenal obstruction with moderate dehydration and weight loss.

Her ultrasonography of the whole abdomen showed features of acute upper gastrointestinal obstruction. Her plain X-ray abdomen showed a typical 'double bubble' shadows of duodenal obstruction. Her upper gastrointestinal tract endoscopy was normal. Her contrast CT scan of the abdomen showed huge distension of the stomach, first and second. parts of the duodenum, due to an abrupt narrowing at the terminal second part of the duodenum due to the duodenal web. Her complete blood count, serum creatinine, serum electrolyte, serum amylase, serum lipase, and liver function tests were normal.

Clinical diagnosis was subacute incomplete duodenal obstruction due to perforated web ('wind sock'variety). Differential diagnosis included intestinal malrotation, annular pancreas, a preduodenal portal vein.

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LEARNING POINTS

1. **Excision of bands and adhesionolysis is not curative for megaduodenum; when it is associated with chronic functional obstruction.**
2. **Bypass procedures like polya partial gastrectomy may successfully cure the disease.**

CASE MANAGEMENT

On exploratory laparotomy on 11 July 2021, both the stomach and the whole duodenum were found to be hugely dilated and elongated. Other diagnoses were ruled out. The rest of the intestine collapsed. A fibrous band across the duodenojejunal flexure in continuity with the ligament of treitz looked like causing the obstruction. This band was excised. Free flow of duodenal contents into jejunum was confirmed. Thus, our operative diagnosis was subacute incomplete duodenal obstruction due to a band.

During the postoperative period, she was tolerating a liquid diet initially. However, from 10th postoperative delirium, on introducing a semisolid diet, she started developing the same features of intestinal obstruction, which required keeping her on nothing per os (NPO) again; but her vomiting persisted even while on NPO.

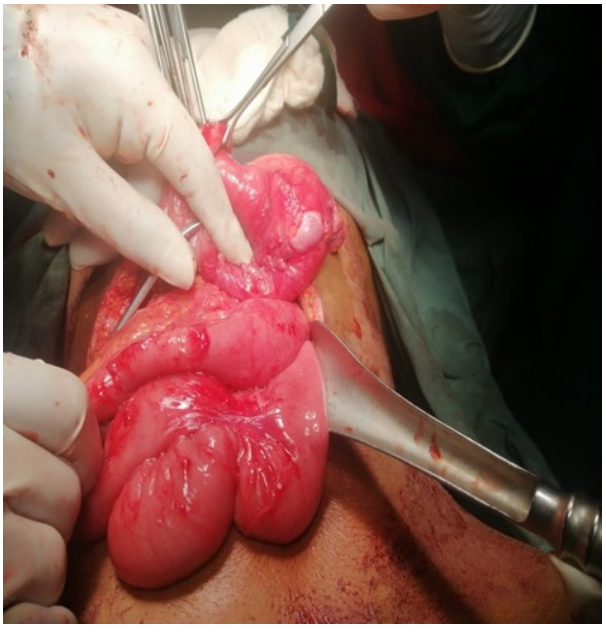

Figure 1 Polya partial gastrectomy completed

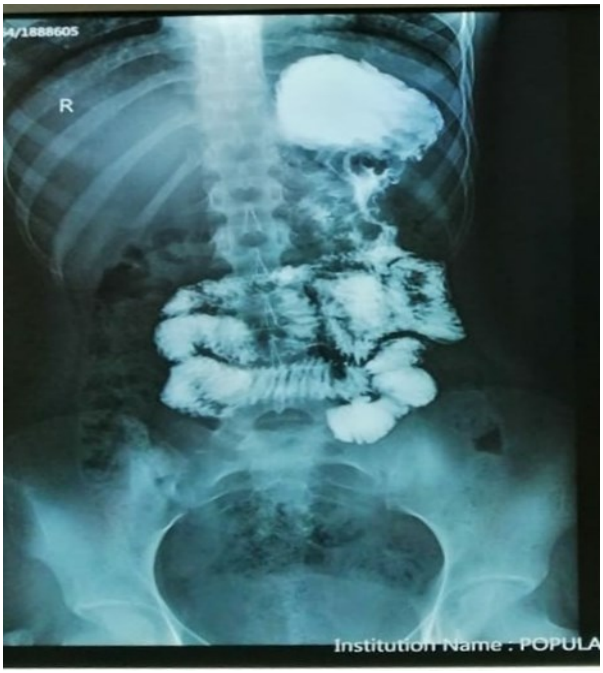

Figure 2 Follow up with barium meal and follow through study after more than three months of polya gastrectomy outlined partial gastrectomy and gastrojejunostomy well. Normal gastric emptying was observed in films taken at one hour interval.

On the 22nd postoperative period, parentral nutrition was started. Her barium meal and follow-through study on the 24th. The postoperative period showed a distended stomach, but gastric and small bowel transit time was normal. Again, the liquid diet was started from the 25th postoperative period gradually. Her anaemia and hypoproteinaemia were corrected with whole blood, fresh frozen plasma (FFP) and albumin. But on the 30th postoperative period, she again developed the same features of upper intestinal obstruction. She was put on NPO again. Her repeat barium meal and follow-through study on the 44th day. The postoperative period showed gastroduodenal enlargement with a huge hypotonic stomach reaching down to the pelvis with slow emptying.

We considered the following differential diagnoses: postoperative bands and adhesions; inadvertently left out duodenal web; and megaduodenum. Therefore, we did a re-do laparotomy on the 46th. Postoperative delirium 51st day after her first operation was seen. The stomach and duodenum were discovered to be greatly dilated upon exploration. The rest of the bowel was normal. Post-operative adhesion was minimum. We

ruled out the duodenal web as the cause of obstruction and did a polya partial gastrectomy. Biopsy was sent from the stomach and duodenum for histopathology. This time, her postoperative recovery was uneventful. By the fourteenth postoperative delirium following this surgery, she was able to tolerate a normal solid diet. Her wound healed by first intention. Following this surgery, she was released on the 19th with postoperative delirium.

Her duodenal histopathology revealed the presence of very scanty ganglion cells. There were also hypertrophied nerve bundles found. The final diagnosis was incomplete duodenal obstruction from megaduodenum with very scanty ganglionosis. She has been symptom-free, gaining weight and attending her school since her polya partial gastrectomy during the last one year of her follow-up period. Follow-up with barium meal and follow-through study was also normal.

DISCUSSION

In 1924, Meichir introduced the idea of an idiopathic megaduodenum and discussed the question at length[2]. Although, environmental factors may contribute to the development of megaduodenum; genetic factors may also be responsible. However, the main causes are duodenal atresia, annular pancreas, adhesions, and superior mesenteric artery syndrome.[3] During operative exploration, we excluded these causes. More unusually duodenal ganglionosis with megaduodenum's similarity to megacolon and megaesophagus diseases can better explain the most plausible causes of it. In our case, her duodenal histopathology revealed the presence of very scanty ganglion cells with hypertrophied nerve bundles, simulating intestinal neuronal dysplasia. Therefore, we suggest that megaduodenum, though rare, should be considered in the differential diagnosis of any functional obstruction of the proximal gut.

In this girl, the gastrodoudenal enlargement with a huge hypotonic stomach reaching down to the pelvis prompted us to do a polya partial gastrectomy as a preferred option of surgical treatment. Even a billiroth II operation could be considered for this patient. Other operative alternatives tried successfully for megaduodenum by different surgeons are side to side dudenoduodenostomys,[1] roux-en Y gastrojejunostomy[4] and radical enterectomy[5]. However, whatever operation we do, the main goals are to relieve or bypass the obstruction which causes the megaduodenum, to improve duodenal emptying and to restore gastrointestinal tract continuity.[6] In all cases, utmost care must be taken to avoid iatrogenic injury to duodenal papillae.

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Conflict of Interest

The author has no conflict of interest to declare.

Ethical approval

The institutional review board approval was not solicited but the patient's ascent and parent's consent were obtained.

ORCID iD:

Abu Saleh Md. Oli Ullah https://orcid.org/0000-00-01-9675-3602

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