Review Report

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Double Pyloric Opening: A Rare Anomaly of the Stomach

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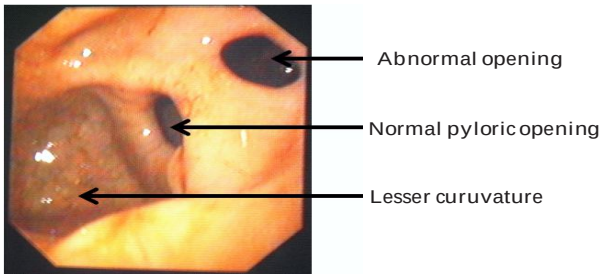
Abstract

Double pyloric opening (DPO) is a condition in which there are two openings of the stomach in to the duodenum with the normal anatomy in the rest of the stomach. DPO may be considered as a gastroduodenal fistula consisting of a short accessory channel between the distal stomach and the duodenal bulb, such that the gastric antrum and the duodenal bulb are connected by two openings separated by a septum or bridge of tissue[1]. This is reported to be a rare anomaly of the stomach which could be congenital or acquired [2-6]. Even though it is considered as a congenital anomaly anatomy textbooks does not state this anomaly in their text under the developmental deformities of the stomach or the duodenum and it is said to be very rare congenital anomaly of which was first reported in 1971 [1]. Mechanism of occurrence of DPO as an acquired condition is said to be secondary to chronic gastric or duodenal ulcers leading to gastro-duodenal fistula [2,4,7]. DPO is most of the time an incidental finding during routine investigation of the upper gastrointestinal tract due to the fact that this is asymptomatic unless present with symptoms related to the concurrent peptic ulcer disease [6,9]. However, some of them have presented with complications such as upper gastro intestinal bleeding and pyloric stenosis. On the other hand inadvertent injury of the abnormal band separating the pyloric cannal is possible during upper gastro intestinal endoscopies. Therefore the knowledge of presence of this anomaly is important for gastrointestinal surgeons and physicians.

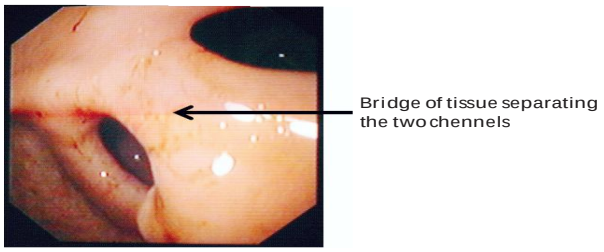
Keyword: Double Pylorus; Anomalies in Stomach.

Introduction

I have encountered a case of this nature during an upper gastrointestinal endoscopy of a 72 year old male with dyspeptic symptoms (Picture 1 and 2). During endoscopy he was found to have normal oesophageal, duodenal and stomach mucosae with evidence of oesophagitis at the gastro-eosophageal junction due to gastro-eosophageal reflux disease (GORD). There was no endoscopic evidence of chronic gastritis at the site of pylorus. Therefore this case is more likely to be a case of congenital DPO. Ideally it is necessary to confirm the absence of chronic gastritis histopathologically and to demonstrate the presence of the musculris mucosa in the bridge separating the two channels to come to the conclusions. However that was not done in this case.



Picture 1:



Picture 2:

Literature Review

History

The first case of a DPO was reported in 1969 by smith and Tuttle [8]. Since then there had been several cases reported in elsewhere in the world. In the early period it was found in adult patients those who have undergone surgery or investigations procedures for dyspeptic symptoms and or peptic ulcer disease. Therefore it was thought to be due secondary to peptic ulcer disease. But some authors debated that and said it is a developmental defect. This fact was supported by reported cases of DPO in children [9].

In the literature this topic has been discussed under various headings which include "duplication of pylorus", "double pyloric channel", "double pylorus" and "duplicated gastric outlet". However, I could not found any of the cases been reported in Sri Lankan literature. A study which consists of 102,958 endoscopic examinations conducted from 1987 to 1999, a diagnosis of double pylorus was made in only 20 patients and this highlighted the rarity of the condition. The prevalence of DPO in routine endoscopic and radiodiagnostic procedures is estimated to be 0.02% to 0.13% with a distinct over representation of males [1].

Aetiology

Duplication of the pylorus may take two forms: either a large fistulous communication resulting in the appearance of a pyloric band, or a narrow irregular channel. Most cases are acquired but some have been regarded as congenital. Evidence proposed for a congenital origin has been the presence of an intact muscularis mucosae and the coexistence of another congenital abnormality [2].

A congenital double pylorus is a rare anomaly caused by gastric and duodenal duplication. The embryogenetic background of the congenital double pylorus probably is the failure of the pyloric lumen to recanalize during the early stages of embryonic life. The congenital double pylorus may be combined with a double antrum (true antroduodenal duplication) or a single antrum, as in this reported case. Stannard et al described a case of congenital double pylorus in which one of the channels led to an intraluminal cystic duplication of the duodenal bulb [9]. Javed et al describe the morphological difference between congenital and acquired DPO. In which he described that congenital DPO showed longer accessory channel which lay on the greater curvature aspect, and had normal mucosal folds passing through it [7].

An acquired DPO is a complication of prepyloric or postpyloric ulcer, which perforates the gastric and duodenal walls and gives rise to a fistula [1]. An observation made by Javed et al supported the theory of genesis of DPO by an existing peptic ulcer. They have demonstrated the development of a DPO by followed up endoscopies in a patient with peptic ulcer disease prior to the development of the DPO [8]. However, not only those benign ulcers give rise to DPO but there are reports on gastric carcinoma infiltrating the pyloric channel and dividing it into two lumens making a DPO. Because of this one can no longer assume that an acquired DPO is only due to benign ulcer disease [10,11].

Therefore the etiology for the occurrence of DPO may be a developmental deformity, complication of benign peptic ulcer disease or sequale of gastric antral carcinoma.

Symptoms

DPO has found in males than in females [11]. This is similar to the gender prevalence of peptic ulcer disease in general. However the average age for the occurrence of DPO is 10 to 20 years older than those with duodenal or gastric ulcer without the DPO [8]. There are no classical symptoms for the disease, and most of the times it is an incidental finding during investigations of the upper gastrointestinal tract and up to 25% of the cases remain undiagnosed [12].

Symptoms related to the DPO includes epigastric pain, dyspepsia, and upper gastrointestinal bleeding and these intern reflect the symptoms of peptic ulcer diseas [3,11]. The commonest presentation of acquired DPO is bleeding. When symptomatic there is often an underlying disease such as alcoholism, diabetes or chronic renal failure. Many patients have ulcer disease of long duration. However in uncomplicated double pylorus there may be few symptoms or none.[4]

Evidence shows the disappearance of symptoms once the ulcer is healed [11]. Therefore the presence of a double pylorus is not necessarily associated with dyspeptic symptoms [2].

Diagnosis

Diagnosis of DPO is always done during investigations of the upper gastro intestinal tract either endoscopicaly or radiologicaly. However, DPO and pyloric deformity without a double channel may be difficult to differentiate for both the

endoscopist and radiologist in routine examinations. Prone, barium-filled views of the pylorus with compression applied will usually allow the distinction to be made radiographically. The endoscopist may find it necessary to distend the antrum sufficiently to separate the thickened distorted antral folds from the pyloric septum [7].

When a DPO is found the next challenge is to differentiate whether it is a congenital one or the acquired one. There are various methods which have been used to differentiate these two conditions. This includes age of onset, morphological appearance, and histological findings. Whatever the method is being used distinguishing between congenital and acquired double pylorus is not always easy [13].

However a congenital origin may be assumed if the diagnosis is made in early childhood, the histologic examination of the bridge of tissue separating two channels shows the presence of mucosa, lamina propria, and muscularis mucosae or if chronic penetrating ulcer or chronic gastritis is absent or if there is no history of using NSAIDs. Furthermore, it seems that congenital duplications usually are located in the greater curvature rather than the lesser curvature, which is the characteristic position for the development of the acquired double pylorus [1,7].

However, the congenital DPO is exceedingly rare while the acquired one is relatively more common. The first congenital double pylorus was reported in 1971. Since then congenital double pylorus has been rarely reported [1].

Complications

This may include development of progressive pyloric stenosis or upper gastrointestinal bleeding. The bleeding is due to the perforation of septum which leads to formation of a large single channel [11]. In addition to this inadvertent damage can occur to the bridge separating the two channels during endoscopic procedures.

Management

Spontaneous recovery of acquired DPO have been observed in follow up cases [11,14]. Therefore surgical intervention should only be considered for patients with refractory symptoms, recurrent ulcers and other complications [6,14,15]. Chiu et al described conservative approached to a case of acquired DPO with repeated endoscopy and medical therapy for gastric ulcer disease showing spontaneous closure of the DPO [11]. On the other hand Graham et al. reported a successful treatment of a symptomatic double pylorus with a biliary sphinterotome [16].

Evidence shows the probability of all symptomatic cases of double pylorus has associated with gastroduodenal mucosal disease. Therefore the management should be directed towards healing the mucosal disease rather than surgically correcting the anatomical abnormality [2]. Because of this, it is widely accepted that the congenital double pylorus is largely asymptomatic and requires no intervention in most cases [1].

Use of proton pump inhibitors and the standard surgical interventions when necessary is advocated by many authors. Some study shows the importance of irradication of helicobactor pylori in healing of ulcers associated with DPO [4]. However Hu TH et al doubted the benefit of eradication of Helicobacter pylori in terms of relief of symptoms and fistula closure in patients with DPO [14].

Conclusion

Congenital abnormalities are rarely found during gastrointestinal endoscopy in adults. Among them congenital DPO is very rare and most of DPO are acquired by ulcer perforation. In general, congenital double pylorus is mainly a harmless incidental finding which needs no therapy, but it should be distinguished from acquired double pylorus. Endoscopists should be aware of this abnormality to avoid complications specially during side-view endoscopy and when interpreting of their endoscopic findings. Early diagnosis and appropriate treatment of the peptic ulcer disease is necessary to prevent this rare complication of acquired DPO.

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