Duodenal Diverticular Haemorrhage in a Patient Taking NSAID

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Abstract
We present a 55 years old male with severe anemia with history of pain abdomen for 2 weeks and malena of 10 days duration. He was taking NSAID (Diclofenac sodium). Upper GI endoscopy done twice did not reveal any abnormality. Upper gastrointestinal (UGI) barium series with small bowel follow through revealed a diverticulum on medial wall of second part of duodenum and there was evidence of ulcer in diverticulum. He underwent diverticulectomy. On follow up after 6 months patient was asymptomatic.

INTRODUCTION
Duodenal diverticulum was first reported in 1870 and in 1913 first radiological demonstration was done by JT case. Most of these are asymptomatic, situated in second part of duodenum and are rarely associated with complication which are usually cause of presentation.1

CASE REPORT
A 55 years old smoker, non-alcoholic man started having mild pain in upper abdomen, after taking NSAID (Diclofenac sodium) for 7 days for low back pain. Pain used to increase after taking meals and was associated with post-prandial fullness. Four days after onset of pain he started passing black tarry stools. He continued to pass 2-3 malenic stools daily and experienced light headedness on getting up from lying down. He was treated at local hospital and then referred to our institute. On examination he was conscious, oriented, pale and ill looking. Pulse was 114 per min, moderate volume, BP was 114-60 mm Hg with postural fall of 30 mm Hg in systolic BP. Rest of general physical and systemic examination was normal. On investigation Hb was 3.5 mg%, TLC 8000/Cu mm, serum urea 62 mg%, creatinine 0.8 mg%. Blood sugar and LFT’s were normal. He was treated for NSAID-induced GI haemorrhage with IV normal saline, injection pentaprazole and blood transfusions. In the mean time his Hb again fell to 4 gm% from 7 gm%. Keeping in view continued malena and fall in Hb, upper gastrointestinal (UGI) barium series with small bowel follow through was done. Stomach and duodenal bulb were normal, a diverticulum was seen on medial border of second part of duodenum (Fig. 1). A persistent fleck was also noticed within diverticulum (Fig. 1 arrow, Fig. 2), suggesting an ulcer crater within pouch. Patient underwent diverticulectomy and an ulcer was detected in the diverticulum. He was discharged on oral iron and folic acid. At 6 months after the surgery patient was asymptomatic and Haemoglobin has risen to 11.5 mg%.

DISCUSSION
Duodenum is second most common site of diverticula in alimentary tract after colon.1,3 Diverticula of duodenum are classified as primary and secondary. Majority of secondary or false diverticula are result of chronic duodenal ulceration, so called prestenotic diverticulum. Primary are true diverticula3 and occur mainly in later decades of life with peak incidence between 50 and 60 years of age and it increases with age.1,3 There is no gender predisposition, but female preponderance has been reported in some studies.1,3

In UGI barium series incidence varies from 0.016 to 6%, autopsy series has placed this as 22-23%,1,3,4 where as in various ERCP studies incidence is 9-23%.4,5 Second part is most common site with 85-90%.1,3 Third and fourth parts of duodenum have 20 and 10% of diverticula respectively.1 Diverticulum may be single or sometimes multiple. These are classified into extraluminal duodenal diverticulum (EDD) and intraluminal duodenal diverticulum (IDD). EDD are acquired, true pouches or sacs of mucosal or submucosal layers herniated through a muscular defect in bowel wall from lumen without recognizable disease and are more common. These can be further classified as periampullary

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duodenal diverticulum (PDD) which are adjacent to or containing the ampulla of Vater or intraluminal portion of CBD. EDD located within radius of 2 cm of major papilla but not containing it are classified as juxtapapillary duodenal diverticulum (JPDD). About 75% of EDD occur with in 2 cm of ampulla of Vater.\textsuperscript{1,5} IDD or windsock diverticula are not true diverticula.\textsuperscript{1,5}

Great majority of duodenal diverticula are asymptomatic.\textsuperscript{1,3-5} Clinical presentation may be characterized by non-specific abdominal symptoms in less than 5%, which are located in epigastrum, right upper abdomen or umbilical area. It is made worse or brought on by eating and relieved by vomiting, belching or assuming certain posture.\textsuperscript{1,3-5} Peptic ulcer disease has been associated in large number of patients with duodenal diverticulum. The relative co-existence of this disease with hiatus hernia increases after fifth decade. It can be associated with jejunal and ileal diverticula in 4-13% and with colonic diverticula in 20-50%.\textsuperscript{2} Pigment stones in CBD and gall bladder and acute pancreatitis has also been noted.\textsuperscript{1,5}

Diverticulitis occurs when drainage of sac is inadequate or neck is narrow or ostium is buried, favouring inflammation and may lead to perforation which in turn may lead to localized abscess or generalized peritonitis. Ulceration may occur because of presence of ectopic gastric mucosa or inflammation. There is a well proven association of NSAID intake and GI haemorrhages of stomach and duodenal origins. Moreover duodenal diverticulum is essentially a mucosal outpouching and can have ectopic gastric mucosa. Although bleeding is extremely uncommon, massive GI haemorrhage leading to shock can occur from diverticula.\textsuperscript{1} Some believe that it is more common than thought and index of suspicion should be raised when common causes have been excluded by endoscopy.\textsuperscript{1,4} Duodeno-colic, gastro-jejuno-colic fistula, pancreatic and/or biliary fistula formation may occur. Neoplastic changes, peridiverticulitis, pancreatitis, enteroliths, blind loop syndrome and bezoar formation are other complication described with this condition.\textsuperscript{1,4}

In UGI barium studies, one of most important feature is abnormal retention of barium in the sac and barium retention for six or more hours is diagnostic.\textsuperscript{1,3} When diverticulitis supervenes, outline of sac becomes irregular, changes in mucosal pattern may also occur e.g. a persistent fleck suggesting presence of an ulcer crater with in pouch.\textsuperscript{1} UGI Endoscopy can identify diverticula most often but in many studies it has failed to identify bleeding diverticulum. In one study it could diagnose only 30% bleeding diverticula and diagnosis may be particularly difficult when diverticulum was situated in third or fourth part of duodenum. Whenever endoscopy can not determine the cause of bleeding, angiography or combination of arteriography and scanning with
Technetium labelled red cells can lead to diagnosis.\textsuperscript{4} ERCP can diagnose large number of diverticula.\textsuperscript{4,5}

Elective surgical treatment of asymptomatic diverticulum is not justified as these are innocent. Surgery is indicated when complications have arisen. Recently there has been controversy regarding managing haemorrhage from diverticulum surgically or endoscopically. Sclerotherapy with epinephrine, endoscopic ethanol injection, heater probe application and laparoscopic duodenal diverticulectomy\textsuperscript{6} are being used for managing bleeding duodenal diverticulum. Treatment for IDD is surgical.

Our patient did not have previous history of GI symptoms and symptoms arose after taking NSAID (Diclofenac sodium). As there is a well proven association of NSAID intake and GI haemorrhage of stomach and duodenal origin and since duodenal diverticulum is essentially a mucosal outpouching and it can have ectopic gastric mucosa, NSAIDs can cause erosion or ulceration of diverticular mucosa and hence GI haemorrhage.

**REFERENCES**