



# Duodenal Invasion of Pancreatic Cancer Resulting in Hematemesis

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Published online: 16 July 2018

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## Introduction

Upper gastrointestinal bleed (UGIB) is a commonly encountered issue requiring hospitalization [1]. Although peptic ulcer disease, angiodysplasia, gastritis or duodenitis, and variceal bleeding are the most common culprits, malignant tumors can account for up to 5% of UGIB cases [2, 3]. Pancreatic carcinoma is an uncommon etiology of GIB but has been described when the cancer invades the GI tract, though presentation with hematemesis is exceedingly rare [4, 5]. We present a patient who was admitted with hematemesis, and endoscopy revealed fistulization of pancreatic malignancy into the duodenum.

## Case Report

A 58-year-old woman undergoing chemotherapy for pancreatic adenocarcinoma presented after an episode of hematemesis. She required aggressive intravenous fluid administration and vasopressors support. Her hemoglobin of 7.6 g/dL on admission reduced further to 4.5 g/dL, necessitating multiple blood transfusions. Pantoprazole infusion was also initiated. Interventional radiographical (IR) arteriography

was performed due to hemodynamic instability. It did not reveal any extravasation or contrast pooling, but IR arteriography was concerning for involvement of the superior mesenteric artery by the pancreatic uncinate mass.

Eventual esophagogastroduodenoscopy showed hematin throughout the upper GI tract without any bleeding or potential bleeding sources. Further, more distal examination revealed a large, friable ulcerated mass in the fourth part of the duodenum (Fig. 1). The mass appeared to have been bleeding previously with no active bleeding at the time of examination (Fig. 2). It was also noted to be partially obstructing the lumen of the GI tract, and as such this area could not be traversed.

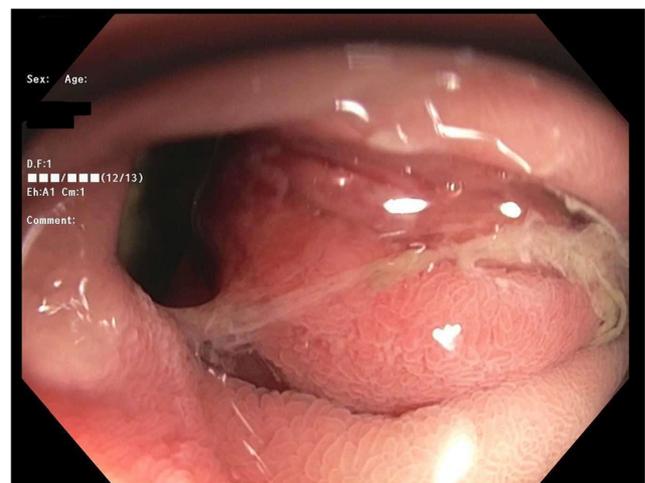
Computed tomography scan of the abdomen revealed increase in the size of the mass of the pancreatic uncinate process, extending into the root of the small bowel mesentery suggesting fistulization to the distal duodenum (Fig. 3). As the patient was considered a poor surgical candidate, external

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**Fig. 1** EGD of the duodenum reveals a congested mucosa with luminal narrowing



**Fig. 2** Ulcerated mass in the fourth part of the duodenum on EGD. No active bleeding was observed but the mass appeared to have been bleeding previously

beam radiotherapy to the pancreatic mass with short-term palliation of bleeding was initiated. Her hemoglobin had improved to 10.4 g/dL at the time of discharge.

## Discussion

Malignant pancreatic tumors rarely cause luminal GIB; presentation with bleeding usually indicates a poor prognosis due to tumor extension [6]. When such bleeding does occur, it typically manifests as melena or hematochezia and is rarely described to present with hematemesis [4, 7, 8]. GIB usually results from invasion of the duodenum, as the thicker gastric wall makes gastric invasion unlikely to bleed [9].



**Fig. 3** Occluded mid-superior mesenteric artery with collateralization around the level of occlusion

Our case presents a unique scenario of hematemesis from direct invasion of the duodenal wall by pancreatic cancer. In this patient, the endoscope was advanced into the fourth part of the duodenum as no active bleeding could be identified in the proximal GI tract, resulting in finding the source of the patient's hematemesis. This suggests that patients with GIB and negative evaluation of the esophagus, stomach, and proximal duodenum should undergo further examination in all parts of the duodenum, especially in the setting of known pancreatic malignancy [3].

**Author's Contributions** HA and KSM wrote and edited the manuscript. RT edited the final manuscript. KC provided important input on radiological findings and significance.

## Compliance with Ethical Standards

**Informed consent was verbally obtained for this case report.**

**Conflict of Interest** The authors declare that they have no conflict of interest.

## References

- Wilkins T, Khan N, Nabh A, Schade RR. Diagnosis and management of upper gastrointestinal bleeding. *Am Fam Physician*. 2012;85(5):469–76.
- Savides TJ, Jensen DM, Cohen J, Randall GM, Kovacs TO, Pelayo E, et al. Severe upper gastrointestinal tumor bleeding: endoscopic findings, treatment, and outcome. *Endoscopy* 1996;28(2):244–248.
- Sharon P, Stalnikovicz R, Rachmilewitz D. Endoscopic diagnosis of duodenal neoplasms causing upper gastrointestinal bleeding. *J Clin Gastroenterol*. 1982;4(1):35–8.
- Lee P, Sutherland D, Feller ER. Massive gastrointestinal bleeding as the initial manifestation of pancreatic carcinoma. *Int J Pancreatol*. 1994;15(3):223–7.
- Tomita H, Osada S, Matsuo M, Shimokawa K. Pancreatic cancer presenting with hematemesis from directly invading the duodenum: report of an unusual manifestation and review. *Am Surg*. 2006;72(4):363–6.
- Wang YU, Yuan C, Liu X. Characteristics of gastrointestinal hemorrhage associated with pancreatic cancer: a retrospective review of 246 cases. *Mol Clin Oncol*. 2015;3(4):902–8.
- Lin YH, Chen CY, Chen CP, Kuo TY, Chang FY, Lee SD. Hematemesis as the initial complication of pancreatic adenocarcinoma directly invading the duodenum: a case report. *World J Gastroenterol*. 2005;11(5):767–9.
- Inceoglu R, Dosluoglu H, Okboy N, Kullu S. Mucinous cystadenocarcinoma of the pancreas: an uncommon presentation with anaemia and upper gastrointestinal bleeding. *J R Soc Med*. 1991;84(3):171–2.
- Ohtsubo K, Watanabe H, Mouri H, Yamashita K, Yasumoto K, Yano S. Endoscopic findings of upper gastrointestinal lesions in patients with pancreatic cancer. *JOP*. 2012;13(4):420–6.