

A Case of Spontaneous Duodenocaval Fistula Formation in a Patient with a Large Necrotic Duodenal Ulcer

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BACKGROUND

- Duodenocaval fistulas (DCFs) are rare types of digestive fistulas.
- **Risk Factors:** penetrating abdominal trauma, a penetrating strut of a retrievable inferior vena cava (IVC) filter, or a foreign body impaction in the duodenum ¹.
- A few cases have been reported in patients with no prior trauma or surgery, such as those with a history of peptic ulcer disease (PUD) or exposure to chemoradiation ².
- **Clinical presentation:** abdominal pain, vomiting, and diarrhea; more severe manifestations include fever, sepsis, and most commonly gastrointestinal bleeding (GIB) ¹.
- **Complications:** bacteremia and fungemia ^{3,4}, vena cava thrombus ^{2,4}, and rarely pulmonary embolism ⁴; the most dreaded complication is hemorrhagic shock ².
- Prompt recognition and management of this entity are paramount as it harbors high mortality rates as high as 40% ^{1,2}.
- **Diagnosis:** computed tomography angiography (CTA) of the abdomen ³.
- **Treatment:** laparotomy, and less commonly with an endoscopic approach ⁵.
- **We present a rare case of** spontaneous DCF formation in a patient with a history of a PUD who presented with fresh bright red blood per rectum (BRBPR) and sepsis secondary to bacteremia and fungemia.

CASE PRESENTATION

- A case of a 63-year-old female patient with a history of stage III ovarian cancer treated with debulking cytoreductive surgery, radiotherapy, and six cycles of adjuvant carboplatin/paclitaxel and bevacizumab, administered every 3 weeks over the last 4 months, who presented for evaluation of a 5-day history of BRBPR associated with clots and dark stools in the setting of recent excessive non-steroidal anti-inflammatory drugs (NSAIDs) use.
- One month earlier, the patient was admitted to the intensive care unit because of hemorrhagic shock secondary to a 3 cm necrotic ulcer in the second part of the duodenum and was treated with cauterization.
- Her recent hospital course was complicated by septic shock secondary to candidemia and *Escherichia coli* bacteremia treated with caspofungin and piperacillin/tazobactam.
- The patient was stable when discharged home, and she was prescribed oral pantoprazole 40mg twice daily.

CASE PRESENTATION (CONTINUED)

- 10 days later, she was readmitted to the hospital for recurrent BRBPR.
- On presentation, she was hypotensive with a systolic blood pressure of 90 mmHg and tachycardic to 150 beats per minute; findings were consistent with hemorrhagic shock.
- Initial investigations were significant for an acute drop in hemoglobin from a baseline of 8.7g/dL to 3.6 g/dL and for an acute kidney injury.
- The patient received intravenous fluid boluses, empiric intravenous antibiotics, and a total of 6 units of packed red blood cells with an improvement in vital signs and complete blood count.
- Blood cultures were sent and grew resistant *Enterococcus faecalis*, *Streptococcus anginosus*, and *Candida albicans*.
- A CTA of the abdomen and pelvis with intravenous contrast was performed and revealed evidence of locules of gas within the intrahepatic IVC with a communication with the duodenal lumen suggestive of a DCF (**Figures 1 and 2**).

FIGURES

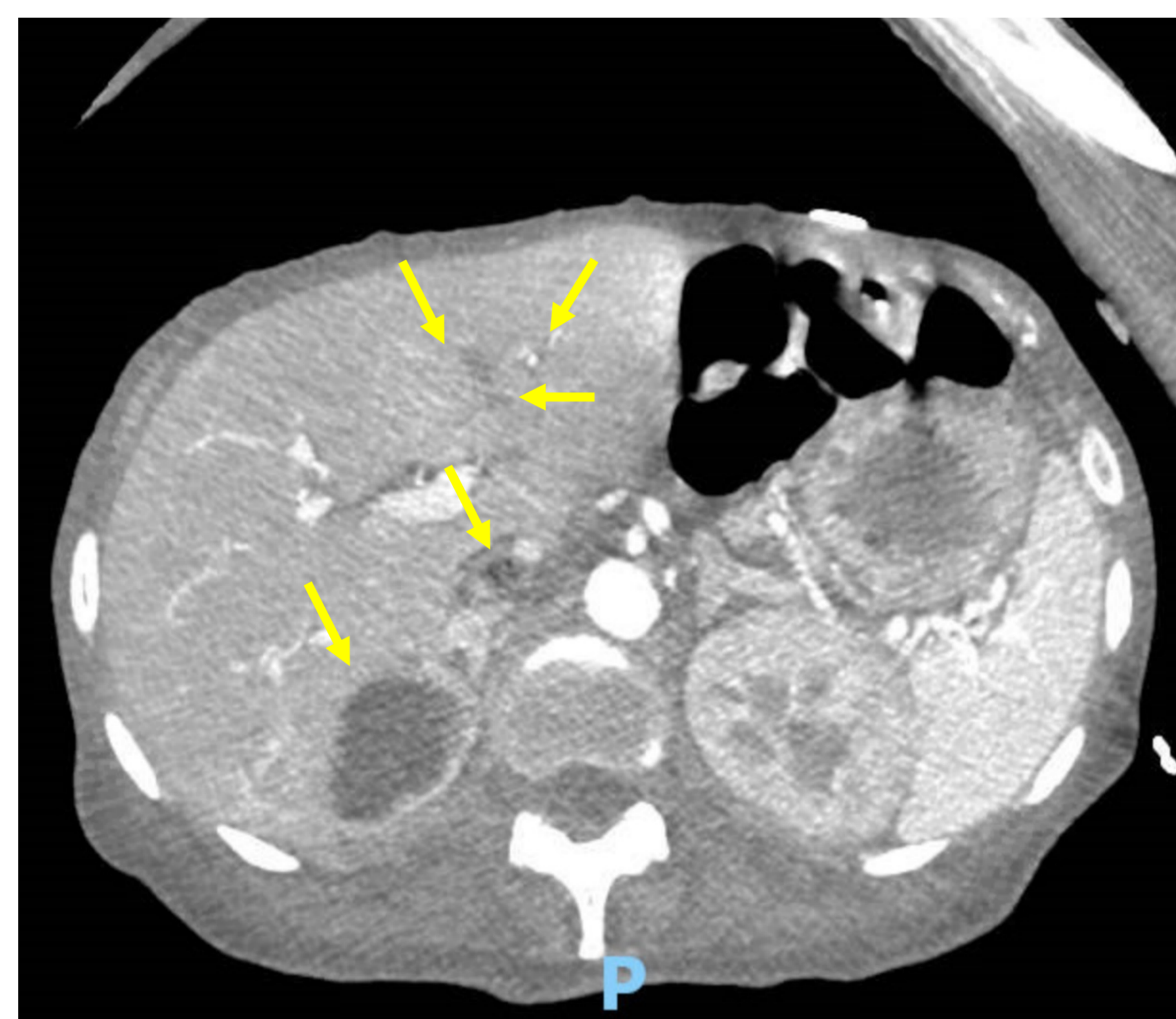


Figure 1. Axial view of an enhanced abdominal CTA scan demonstrating hypodensities within the hepatic portal system (yellow arrows) due to a duodenocaval communication.



Figure 2. Coronal view of an enhanced abdominal CTA scan demonstrating hypodensities and locules of gas within the intrahepatic and infrahepatic IVC (yellow asterisks).

CASE PRESENTATION (CONTINUED)

- Interventional radiology team was contacted and recommended surgical evaluation as the case was not amenable to endovascular intervention due to high mortality.
- General surgery, surgical oncology, and vascular teams concluded that the patient was inoperable due to her low functional status (ECOG 4) and to the high intraoperative mortality associated with reconstruction that would approach 100%.
- The patient was evaluated by palliative team and then referred to hospice care for end-of-life measures; she was discharged with home hospice services.
- She passed away the following week.

DISCUSSION

- Our case describes a patient with a history of ovarian malignancy treated with surgery and adjuvant chemoradiotherapy, which led to duodenitis, with subsequent ulceration, fistula formation, and GIB.
- The side effects of radiation, including mucositis and ulcerations, are directly proportional to the dose ⁶.
- The coadministration of bevacizumab, an antiangiogenic agent, can be implicated in DCF formation as it promotes gastric mucosal ulceration and delays its healing ⁷.
- The initial treatment of the bleeding ulcer with cauterization might have favored further mucosal thinning and necrosis, promoting ulcer perforation and fistula formation.
- The recent excessive NSAID use might have predisposed our patient to hemorrhagic shock.
- In this way, our case illustrates a rare and dreaded complication of DCFs ², with only two previously reported similar ones described by Perera et al. ⁸.

CONCLUSIONS

- Duodenal ulceration and fistula formation likely arose from fibrosis and mucosal damage due to radiotherapy, chemotherapy, and recent cauterization.
- Discontinuation of radiation or any drug that might potentiate or worsen mucosal ulceration, at least until endoscopic healing is proven, might be beneficial in similar cases for fewer complications to happen.
- In patients presenting with BRBPR and sepsis, clinicians should highly suspect DCFs, especially in the setting of a history of PUD, abdominal surgery, chemoradiotherapy, and recent excessive NSAID use.

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