



# Hemorrhage from choledochojejunal varices: a rare complication of Whipple procedure

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## Background

Ectopic varices are portosystemic collaterals formed outside the esophageal-gastric region and frequently pose a diagnostic and therapeutic challenge. Rarely, ectopic variceal bleeding can occur as a complication of pancreatic surgery. We describe a case of gastrointestinal bleeding from ectopic choledochojejunal varices after Whipple surgery.

## Case Presentation

### Chief concern:

- 66-year-old man with a history of intraductal papillary mucinous neoplasm (IPMN) with high-grade dysplasia status post Whipple procedure two years prior to presentation presented to the hospital with melena.

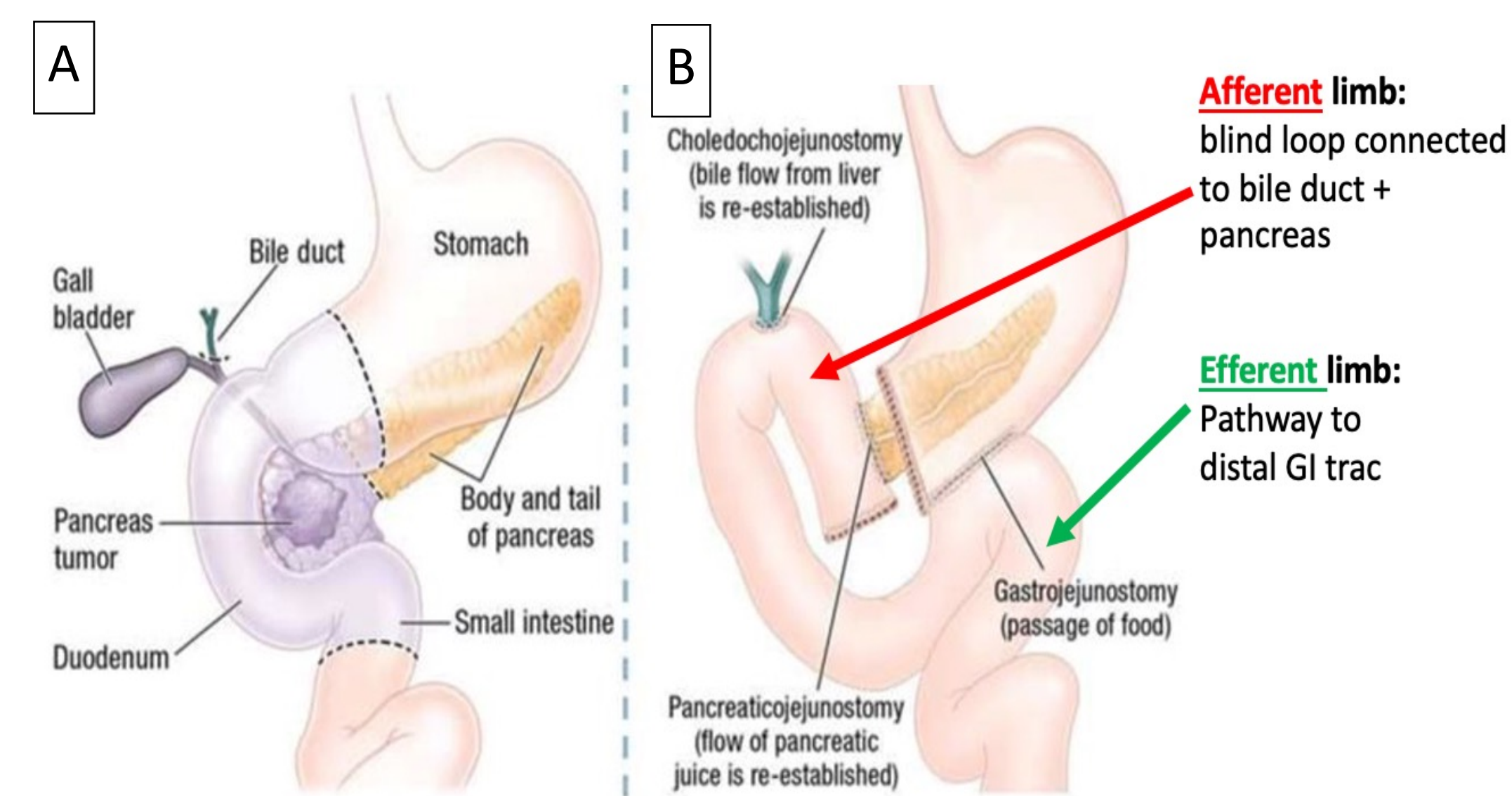
### Medical and surgical history:

- Remote history of recurrent alcohol-related pancreatitis
- Whipple procedure complicated by splenic vein thrombosis and disease recurrence
- Surgical debridement of recurrent IPMN with intra-operative portal vein injury performed 3 months before presentation

### Clinical presentation:

- Vital signs were stable
- No stigmata of liver disease
- Hemoglobin 8.0 g/dL (baseline of 11 g/dL), Platelets 174 x 10<sup>9</sup>/L, BUN 29 mg/dL, INR 1.0

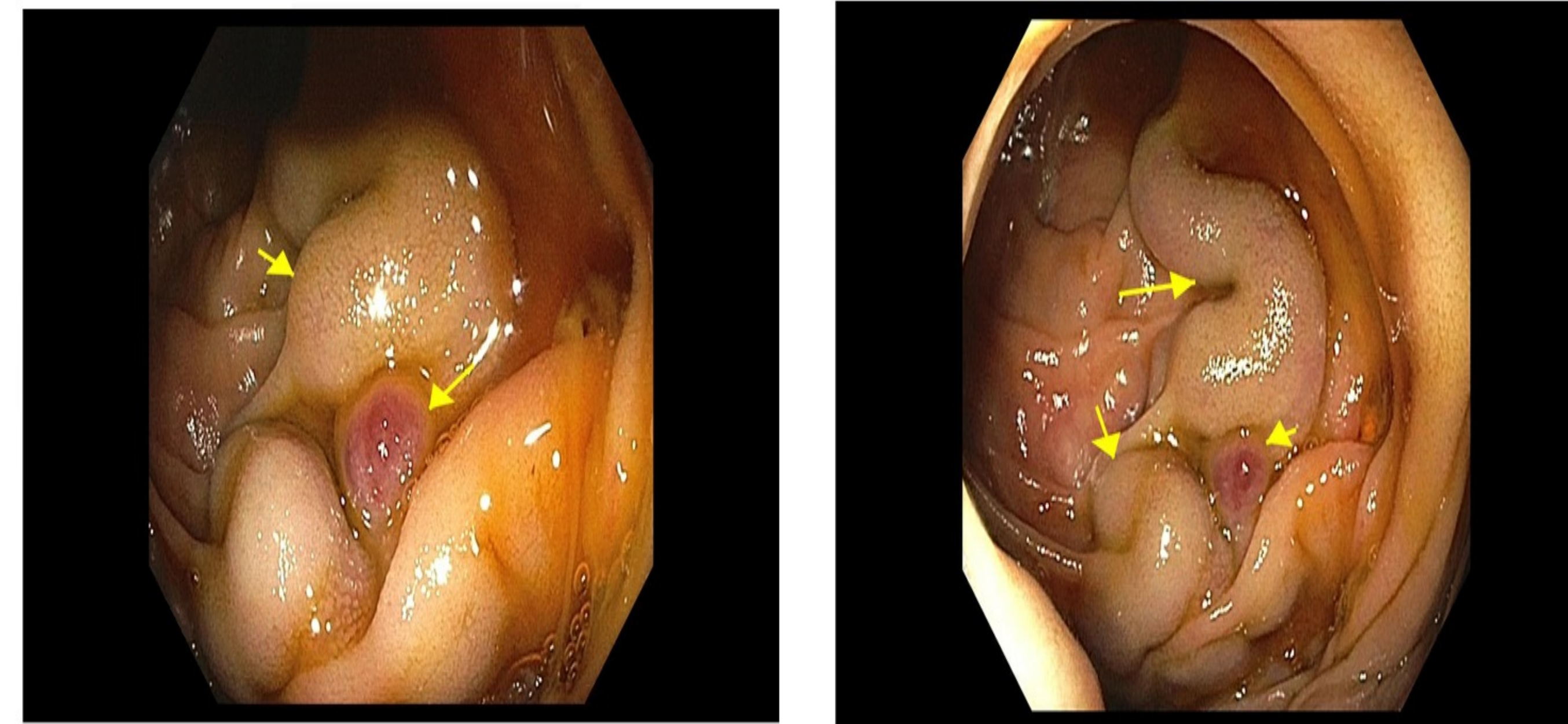
**Figure 1. Post-Whipple surgical anatomy.** (A) Standard Whipple procedure involves resection of the pancreatic head and duodenum. (B) Anastomoses formed include choledochojejunostomy, pancreaticojejunostomy, and gastrojejunostomy. Adapted from the Moffitt Cancer Center webpage.



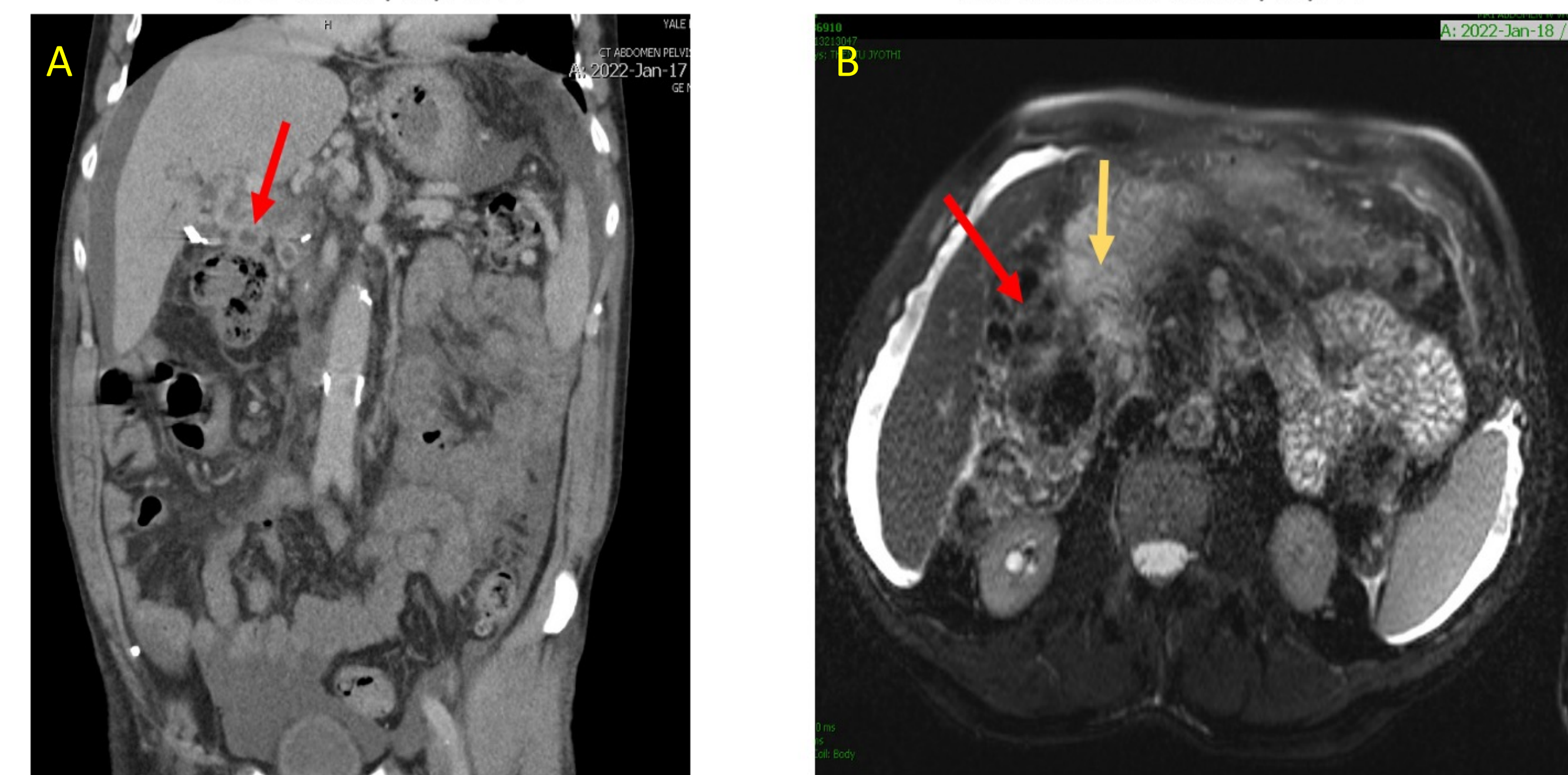
## Case Workup

- Initial EGD and colonoscopy were both unremarkable
- Second look endoscopy showed ectopic varices with stigmata of recent bleeding at the choledochojejunal anastomosis (figure 2)
- Cross-sectional imaging obtained (figure 3):
  - Chronic occlusion of the portal and proximal superior mesenteric veins with cavernous transformation
  - Extensive upper abdominal varices and splenomegaly
  - No radiologic evidence of cirrhosis

**Figure 2. Endoscopic findings of choledochojejunal varices.** Ectopic varices with stigmata of recent bleeding (yellow arrows) at the choledochojejunostomy.



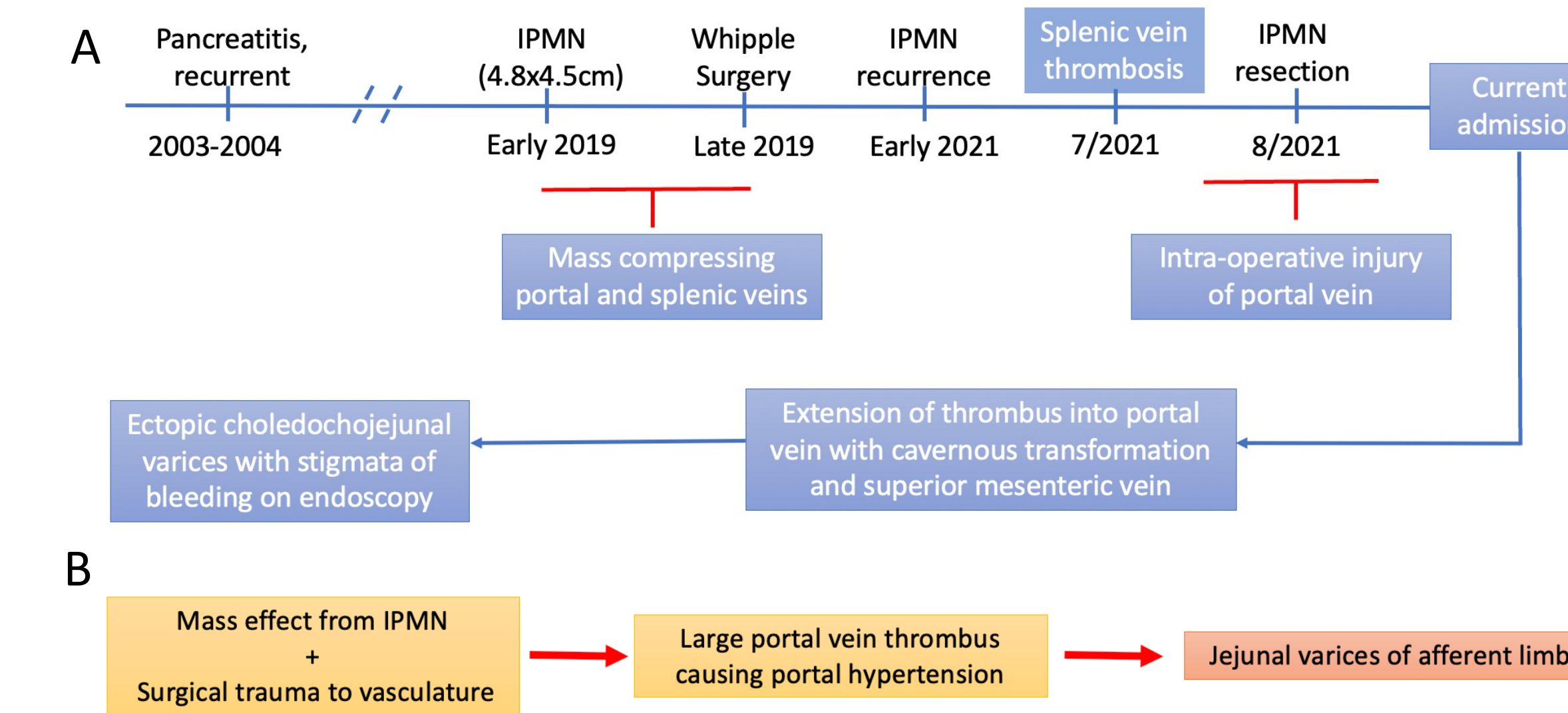
**Figure 3. Radiography of portal vein thrombus.** Computed tomography (A) and magnetic resonance imaging (B) of the abdomen and pelvis highlighting large upper abdominal collaterals (red arrow) that drain close to the afferent limb (yellow arrow).



## Case Resolution

- Multidisciplinary discussion reviewed treatment options:
  - Endovascular approach technically infeasible given extensive chronic mesenteric thrombus
  - Surgical approach prohibitively high-risk
  - Endoscopic treatment best option
- Therapeutic endoscopic injection of 2-octyl cyanoacrylate into the ectopic varices was performed
- Patient has remained without recurrent bleeding in over 8 months of follow-up

**Figure 4. Timeline and proposed pathophysiology.** (A) Pertinent medical and surgical events leading to diagnosis of choledochojejunal varices. (B) Schematic of proposed pathophysiological formation of choledochojejunal varices.



**Table 1. Management of ectopic variceal bleeding.** Summary of approaches previously used for treatment of choledochojejunal varices are outlined below.

Approach	Intervention	Portal pressure decompression	Advantages	Risks and barriers
Endoscopy	Cyanoacrylate injection	No	<ul style="list-style-type: none"> <li>Treat multiple variceal sites</li> <li>No vascular limitations</li> </ul>	<ul style="list-style-type: none"> <li>Cardiopulmonary embolization</li> <li>Variceal recurrence</li> </ul>
	Portal vein angioplasty	Yes		<ul style="list-style-type: none"> <li>Vascular limitations</li> <li>In-stent thrombosis/stenosis</li> </ul>
Endovascular	Transjugular intrahepatic portosystemic shunt	Yes	<ul style="list-style-type: none"> <li>Minimally invasive</li> <li>Less sedation</li> <li>Multiple IR approaches can be used during a procedure</li> </ul>	<ul style="list-style-type: none"> <li>Vascular limitations</li> <li>Cardiac dysfunction</li> <li>Portosystemic encephalopathy</li> <li>Hepatic ischemia</li> </ul>
	Percutaneous embolization	No		<ul style="list-style-type: none"> <li>Vascular limitations</li> <li>Variceal recurrence</li> </ul>
Surgery	Surgical re-anastomosis	No	<ul style="list-style-type: none"> <li>Direct removal of variceal bleeding site</li> </ul>	<ul style="list-style-type: none"> <li>High peri-operative risks</li> <li>Variceal recurrence</li> </ul>
	Surgical shunt	Yes	<ul style="list-style-type: none"> <li>Physiologic re-distribution of portal pressure</li> </ul>	<ul style="list-style-type: none"> <li>High peri-operative risks</li> <li>Anatomical limitations</li> </ul>

## Discussion

Hemorrhage from choledochojejunal varices following pancreatic surgery has been rarely described in the literature.

Given the potential for vascular injury and local inflammation, these procedures can result in mesenteric venous thrombosis or stenosis with subsequent ectopic variceal formation (figure 4).

Therapeutic interventions include endoscopic, endovascular, and surgical approaches (table 1).

Effective management of ectopic variceal hemorrhage involves:

- Defining the vascular supply
- Early multi-disciplinary involvement

## Conclusions

- Loco-regional factors (portal vein thrombosis, post-operative anatomy) can lead to ectopic variceal formation.
- Defining the vascular supply of varices guides treatment of ectopic variceal hemorrhage.
- A multi-disciplinary approach to treatment of ectopic variceal hemorrhage is of paramount importance.

## References

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