Case of the Week
September 2014

Case Courtesy of Drs. Gillian Shiau, MD and
Jason Wong, MD - FRCPC
Foothills Medical Centre
University of Calgary, AB

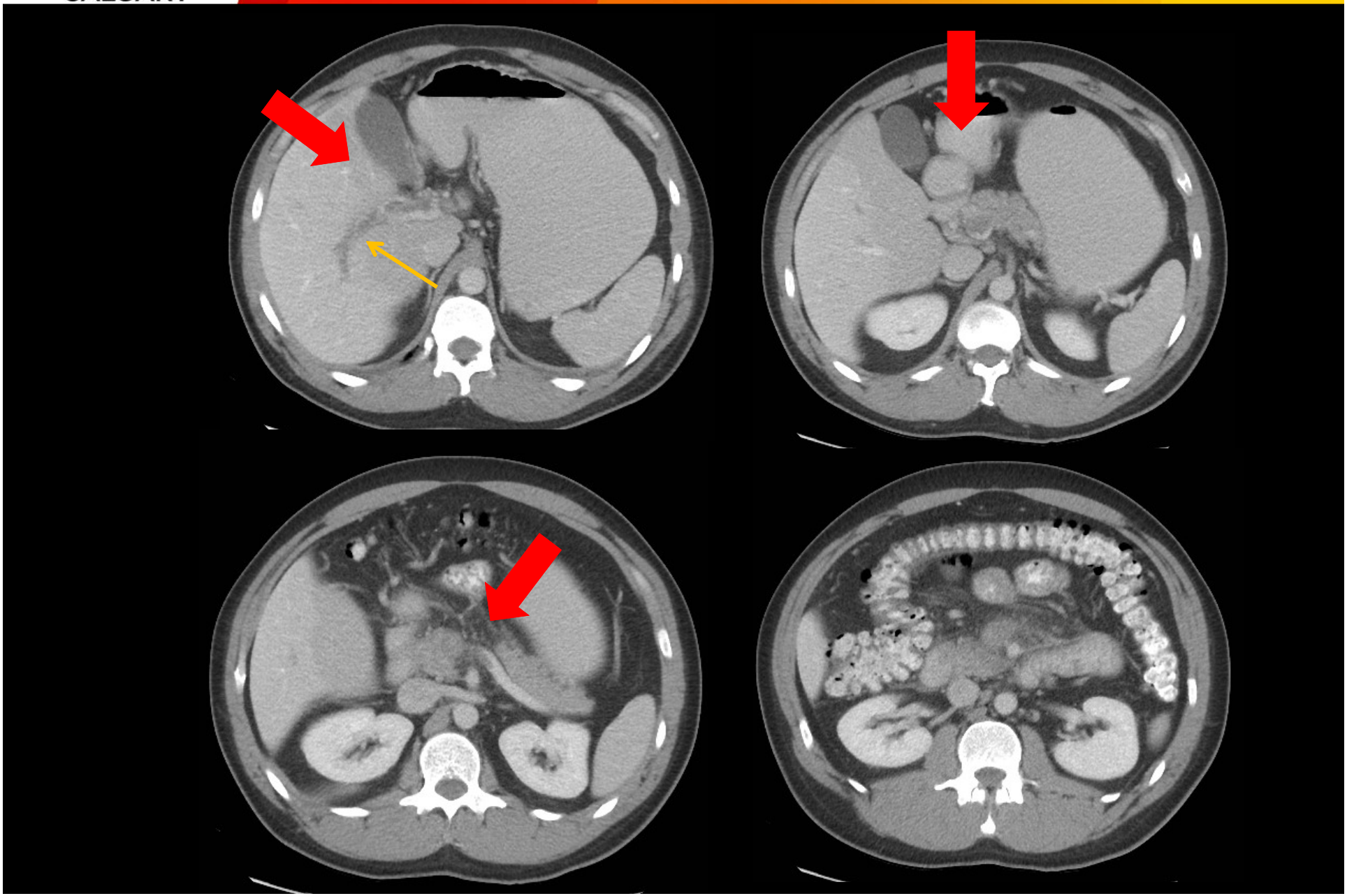
UNIVERSITY OF CALGARY

Case Report

- 33 year old male with new onset abdominal pain
- Previously healthy
- Labwork:
  - CBC and lytes were normal – plts 352, no leukocytosis
  - Lactate normal
  - ESR normal
  - INR, PTT, PT normal
- Abdominal X-ray unremarkable
- A CT scan of the abdomen/pelvis was performed

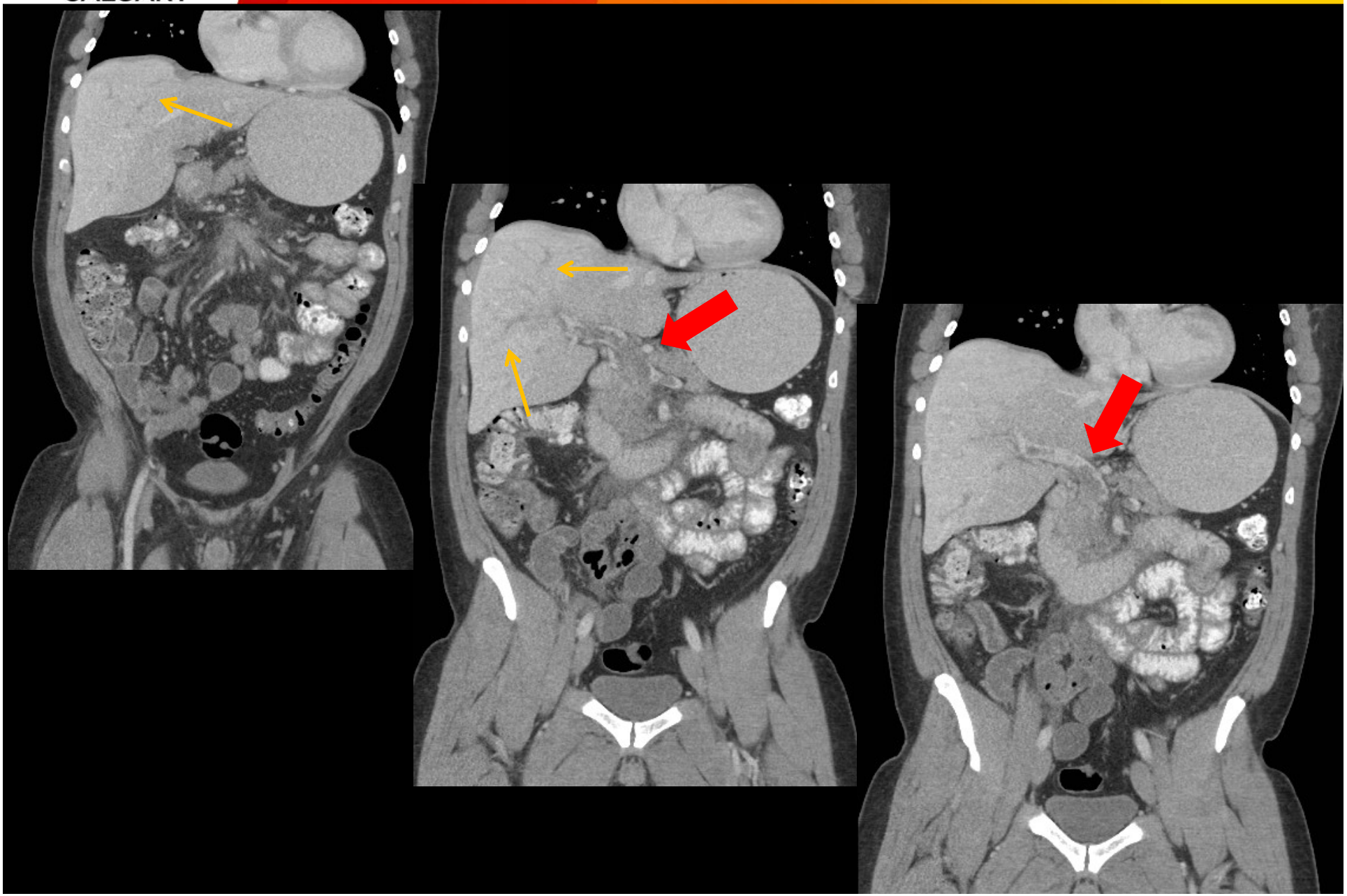
UNIVERSITY OF CALGARY

Initial CT



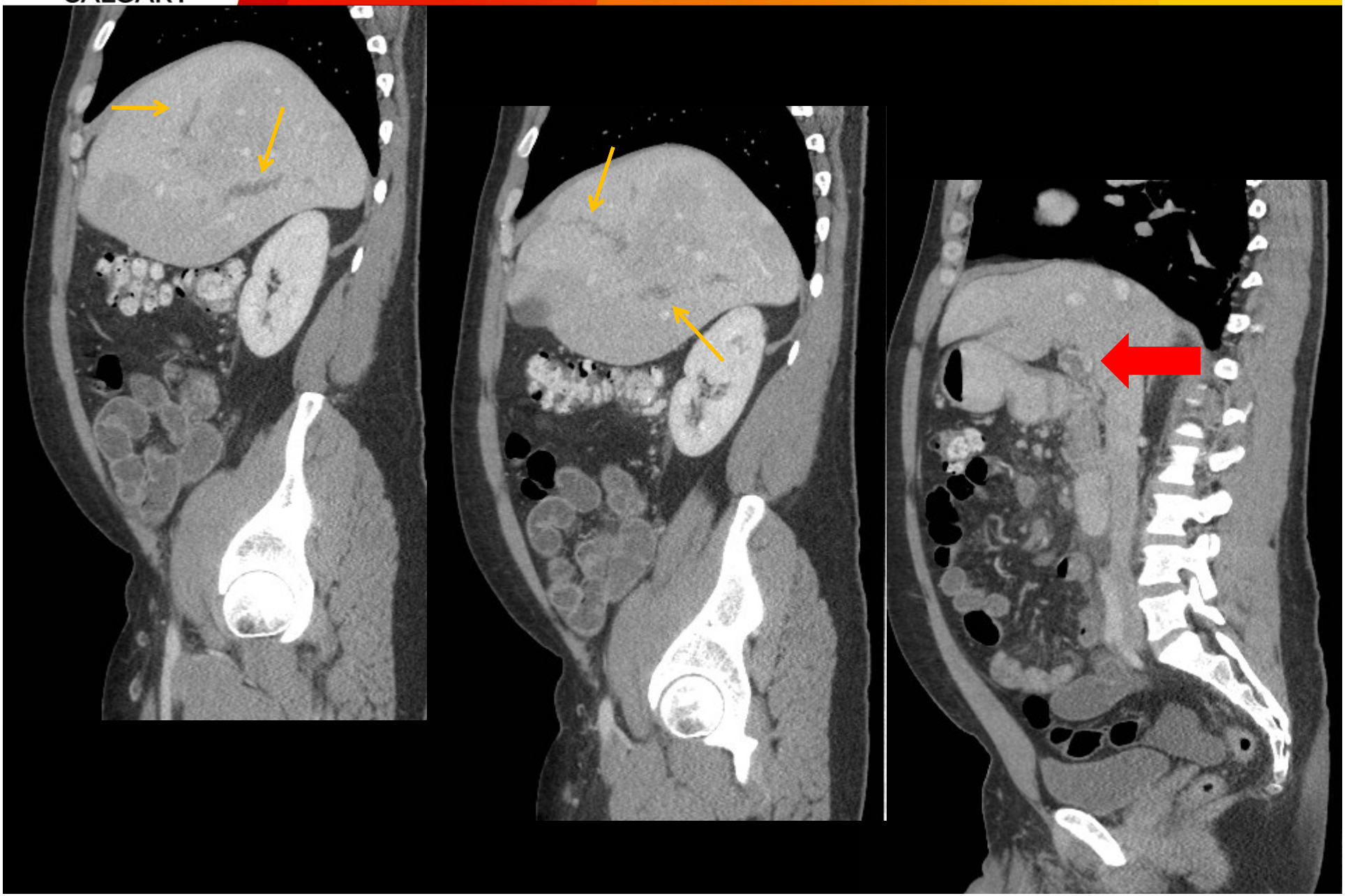
UNIVERSITY OF CALGARY

Initial CT



UNIVERSITY OF CALGARY

Initial CT



UNIVERSITY OF CALGARY

CT Findings

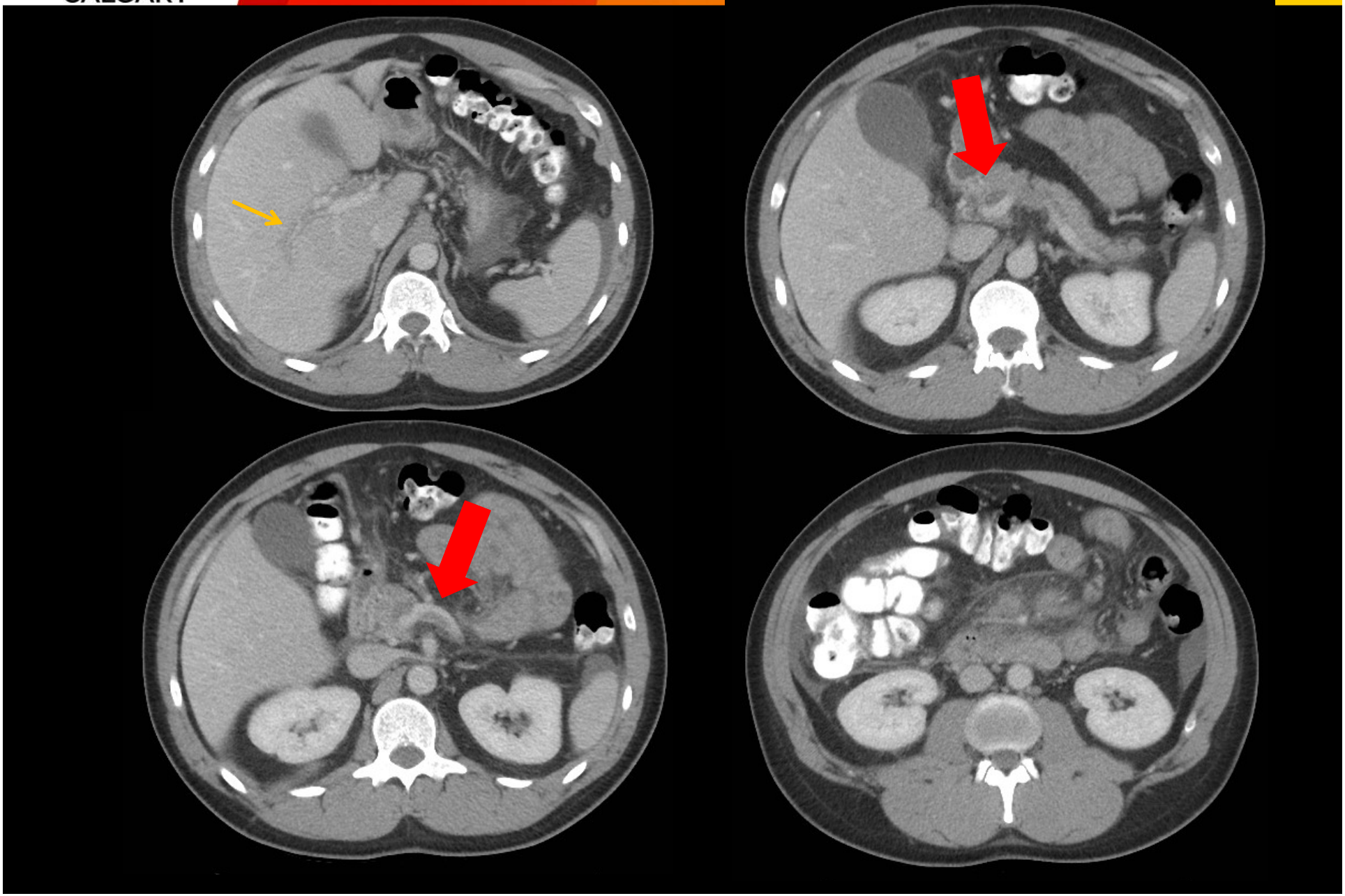
- CT demonstrates:
  - Main portal vein (MPV) non-occlusive thrombus
  - Extension into the intrahepatic portal veins, moreso on the right compared to the left
    - Geographic hyperdense and hypodense regions likely sequelae of perfusion defects
  - Involvement of the splenic, superior mesenteric, and inferior mesenteric veins
  - *No etiology (extrinsic compression or adjacent mass lesions)
  - *No findings for ischemic gut

Clinical Course

- Hospital admission to MTU with Hematology consulting
- 4 days of systemic anticoagulation
- Family history with heterozygous antithrombin III deficiency (in father + sisters)
- Thrombosis workup initiated
  - PT: 12 (10.2-13.1s)
  - INR: 1.1 (0.9-1.1)
  - PTT: 32.8 (25.0-35.0s)
  - JAK2 negative
  - Antithrombin (antigen): 0.36 (0.72-1.23U/mL)
  - Antithrombin (chromogenic): 0.42 (0.78-1.24U/mL)
- Patient was experiencing severe abdominal pain – unrelenting → repeat CT

UNIVERSITY OF CALGARY

Repeat CT



UNIVERSITY OF CALGARY

Repeat CT Findings

- Persistent extensive occlusive thrombus within the SMV and IMV
- Extension of non-occlusive thrombus into the nondependent aspect of the MPV with areas of mild improvement in the intrahepatic portal venous branches
- Stable stranding around thrombosed mesenteric veins
- No findings for bowel necrosis or dilated loops

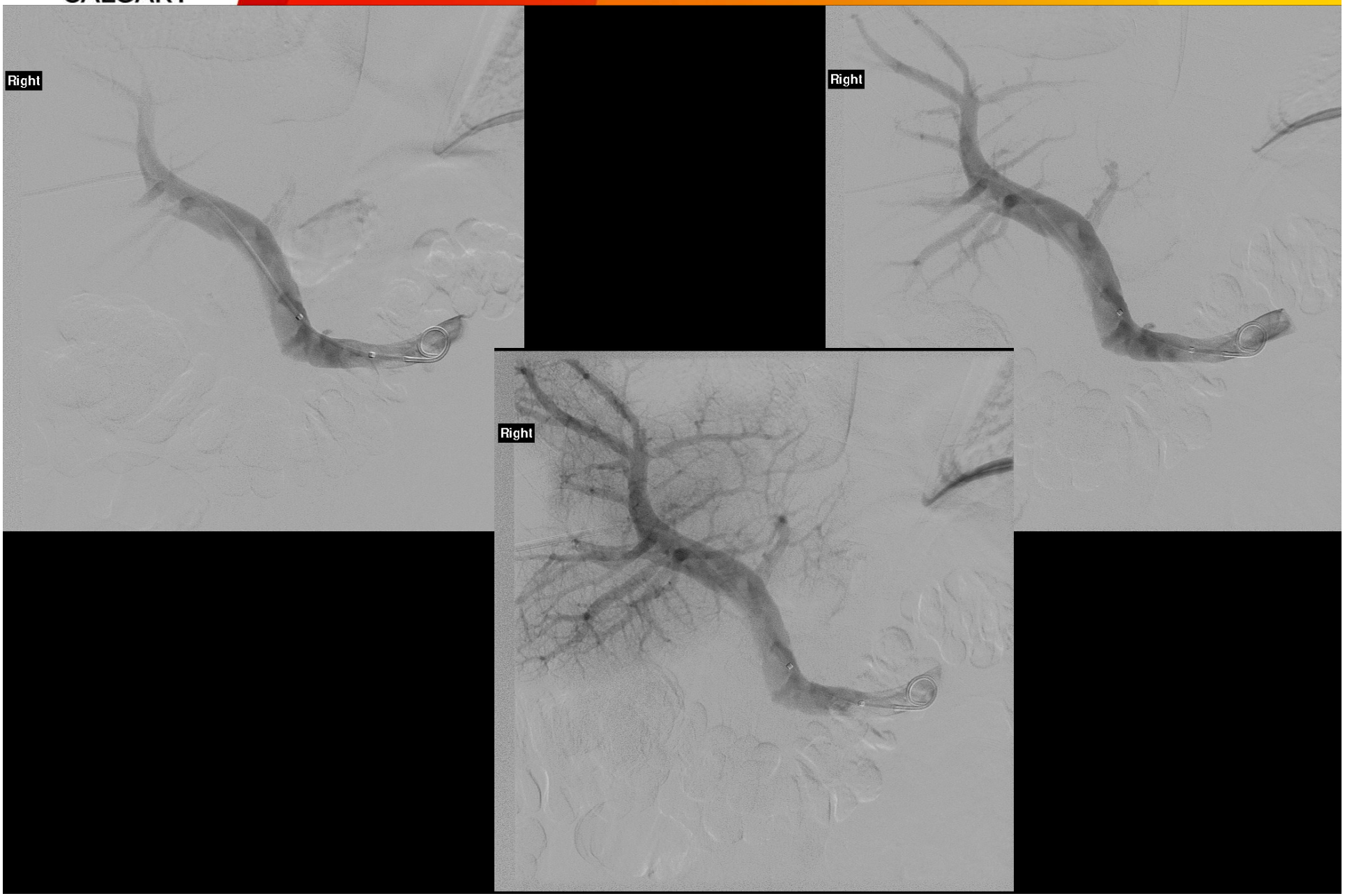
UNIVERSITY OF CALGARY

Clinical Course

- Given ongoing symptoms despite maximal medical therapy, catheter-directed thrombolysis was recommended

UNIVERSITY OF CALGARY

Angio Suite – MPV



UNIVERSITY OF CALGARY

Angio Suite – SMV Selective

UNIVERSITY OF CALGARY

Procedure

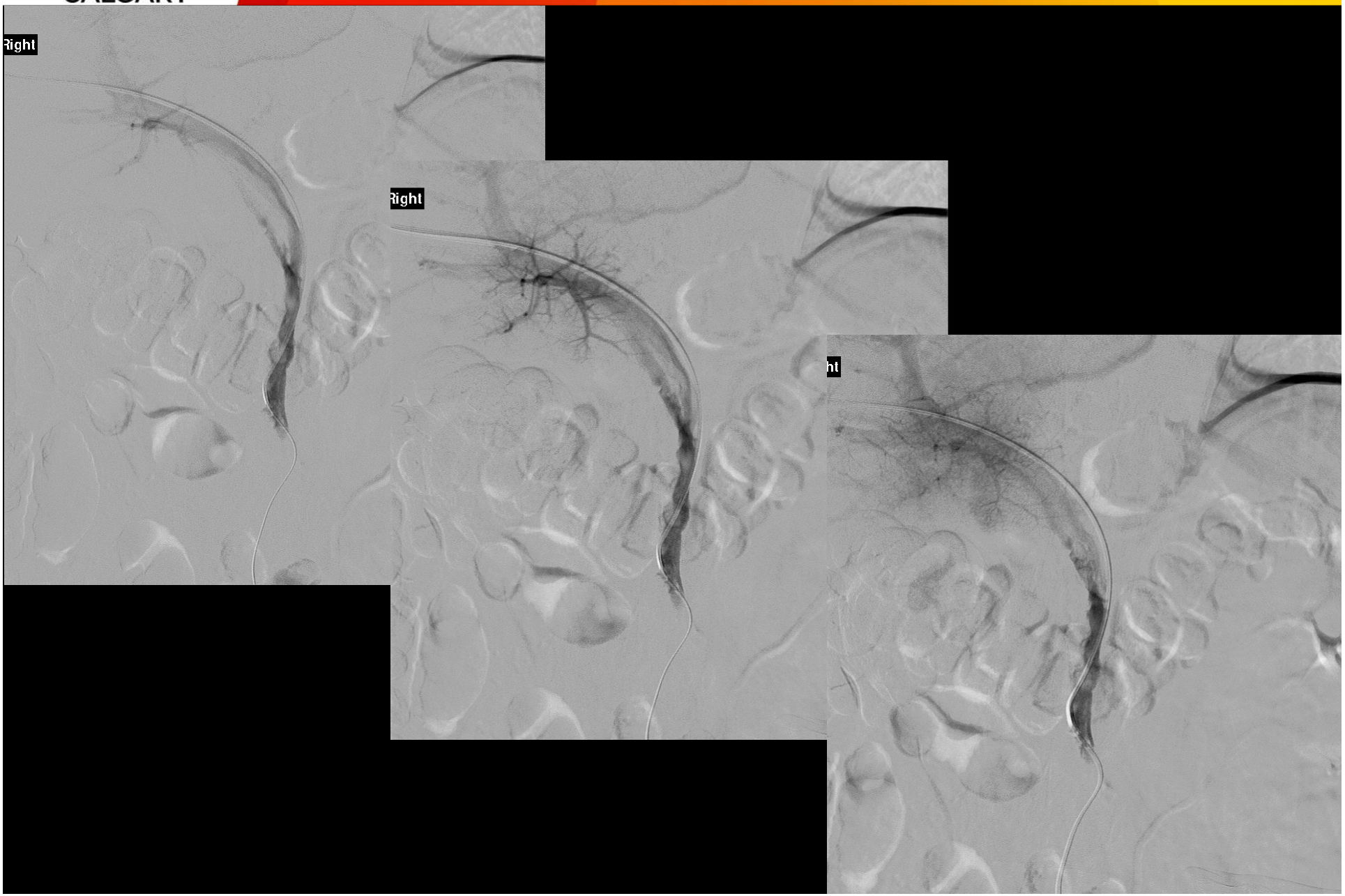
- Pre-procedural ultrasound confirmed thrombus in multiple peripheral intrahepatic portal branches
- Via a percutaneous transhepatic approach, initial venogram demonstrated multiple filling defects within the main portal, splenic, and superior mesenteric veins

UNIVERSITY OF CALGARY

Thrombolysis – AngioJet and angioplasty

UNIVERSITY OF CALGARY

Post-Procedure – In-Line Flow



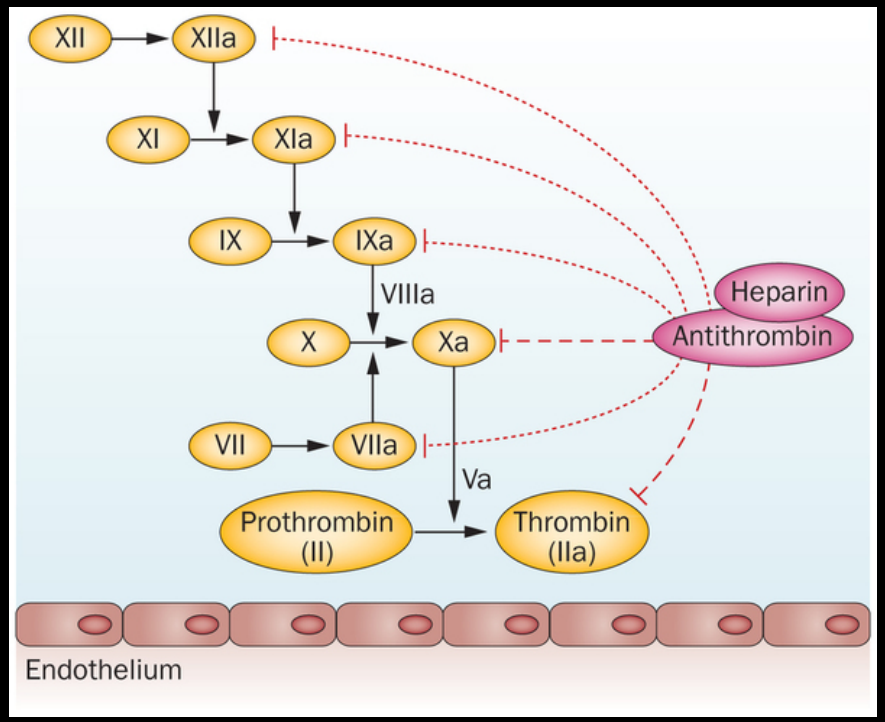
UNIVERSITY OF CALGARY

Post-Procedure

- An AngioJet Xpeedior device was maneuvered into the distal SMV for pharmacomechanical thrombolysis
- Repeat venogram demonstrated persistent intraluminal filling defects, which improved with angioplasty resulting in a partially-recanalized SMV
- The patient was experiencing moderate discomfort and given in-line flow, the case was terminated
- The patient's pain completely resolved by the next morning
- Discharged on warfarin

Discussion

- Rare occurrence – accounts for 5-15% of acute mesenteric ischemia
  - 20-40% are "idiopathic" with majority of cases d/t underlying hypercoagulopathy (eg. neoplasm, polycythemia vera, protein C/S deficiency, AT III deficiency)



Martinell et al. Nature Reviews Cardiology 2014

UNIVERSITY OF CALGARY

Discussion

- Clinical Presentation
  - Progressive/worsening diffuse, colicky, AP; anorexia; abdominal distention; heme+ stool
  - Can be acute (associated with risk of bowel infarction + peritonitis), subacute (AP), or chronic (complications → GI bleeding/ascites)
- Diagnosis:
  - CT (direct and indirect findings) including filing defect(s), mesenteric congestion, SB mural thickening
  - US (dilated SMV w/ intraluminal echoes) – can detect AND quantify residual flow, direction of flow, presence of collaterals (if chronic)

UNIVERSITY OF CALGARY

Discussion

- Mainstay of therapy = surgical resection of infarcted bowel and anticoagulation
  - Mortality ~20% for those who undergo surgery and anticoagulation (92-100% for those who do NOT undergo surgery)
  - Surgical complications = short bowel syndrome, wound infxn, sepsis, PE, GI bleeding
  - Recurrence in 14% of those who have resection within 6 weeks

UNIVERSITY OF CALGARY

Key Takeaways

- While bowel necrosis mandates surgical intervention, this case highlights an opportunity for a minimally-invasive procedure, limiting risks associated with surgery and systemic anticoagulation

- Pre-procedural planning with special consideration of the approach and sites for thrombolytic agent delivery

UNIVERSITY OF CALGARY

References

- Bradbury et al. Mesenteric Venous Thrombosis: Diagnosis and Noninvasive Imaging. Radiographics 2002; 22: 527-541.
- Goldberg FM. Kim HS. Treatment of Acute Superior Mesenteric Vein Thrombosis with Percutaneous Techniques. AJR November 2003 vol 181: 1305-1307.
- Martinelli I, De Stefano V, Mannucci PM. Inherited risk factors for venous thromboembolism. Nature Reviews Cardiology 11, 140–156 (2014) doi:10.1038/nrcardio.2013.211