



# Mesenteric Ischemia

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2020



# History

- A&E presentation
- 53 year
- Male
- C/O abdominal pain, anorexia, nausea & vomiting for 5 days
- Smoker, social alcohol drink
- PMHx



# Clinical examination

- Low grade fever
- Tachycardia
- Abdominal distension
- Diffuse tenderness
- Absent bowel sounds



# Investigations

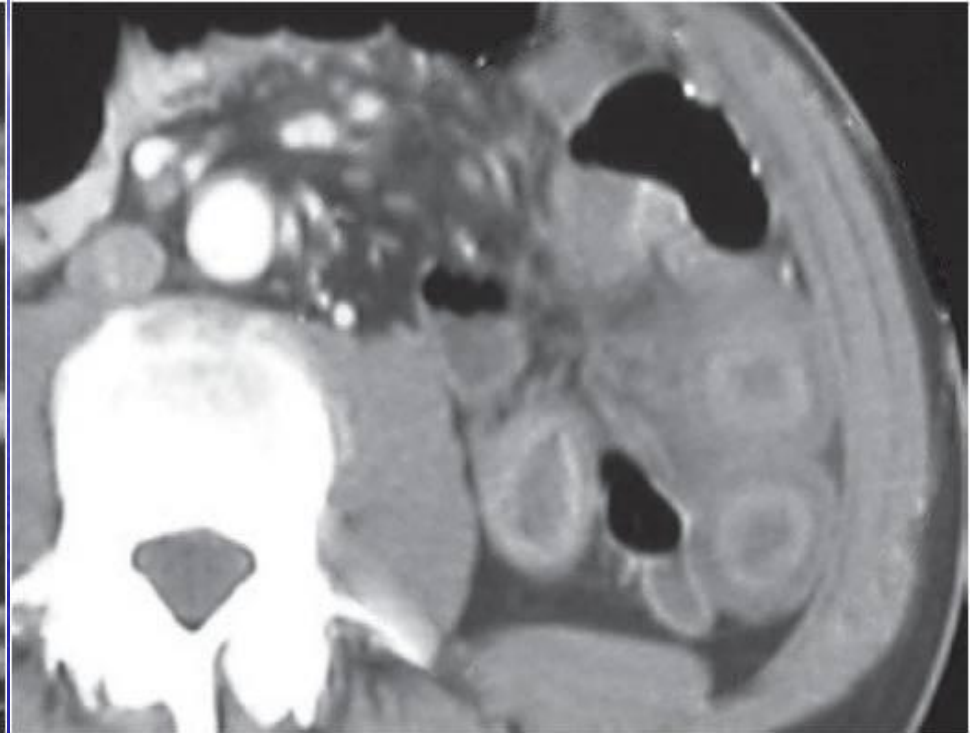
- FBC
- U&E
- LFT
- CRP
- ABGs
- AXR
- CXR



# Management

- IV fluid resuscitation
- Bladder cath
- Urine output & I/O chart
- ? IV AB
- Next step

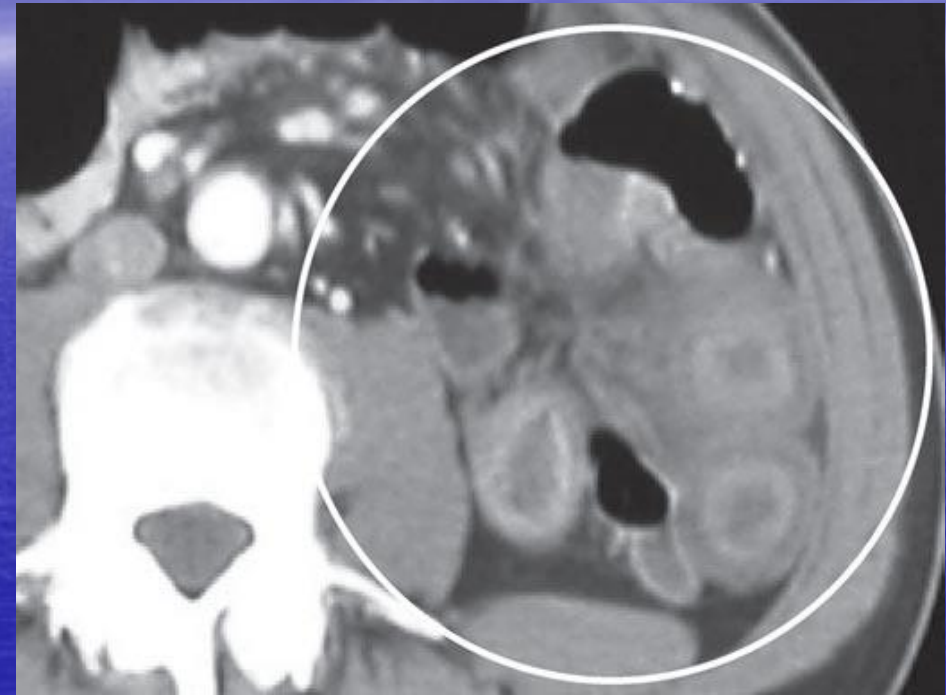
# CT scan



# CT scan

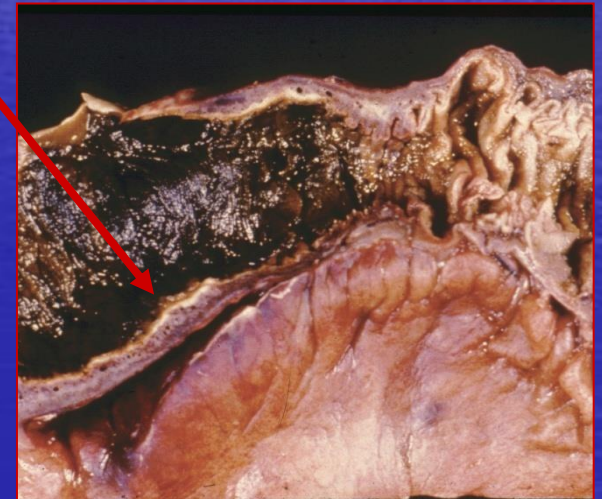
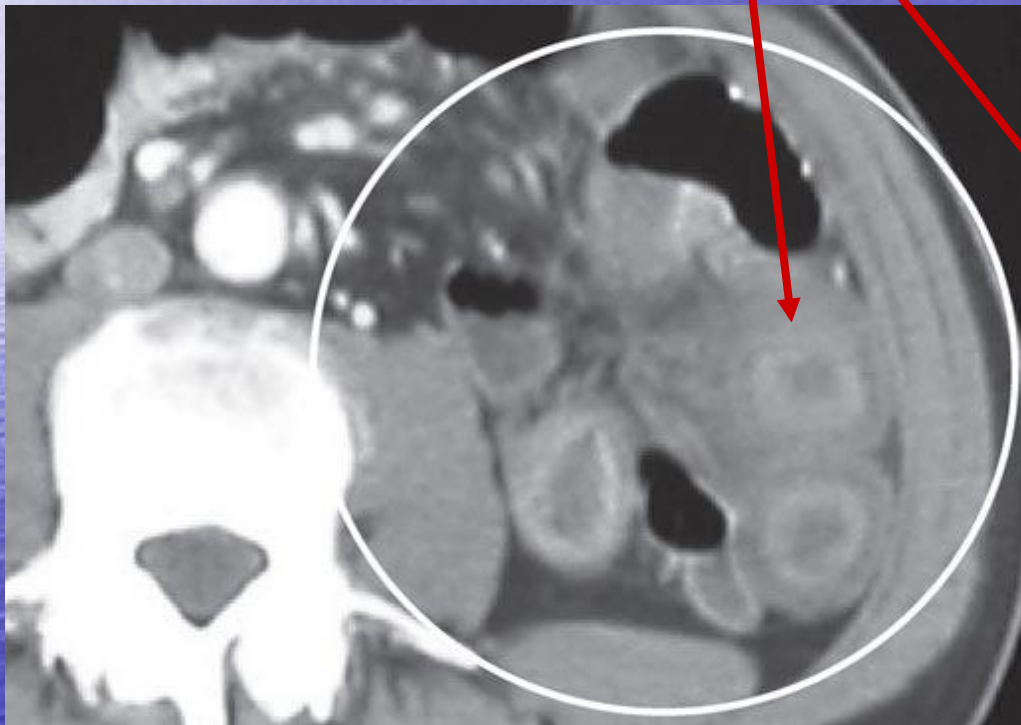


Embolus in SMA



Mural thickening of intestine after reperfusion - target appearance.

# CT scan and pathological finding

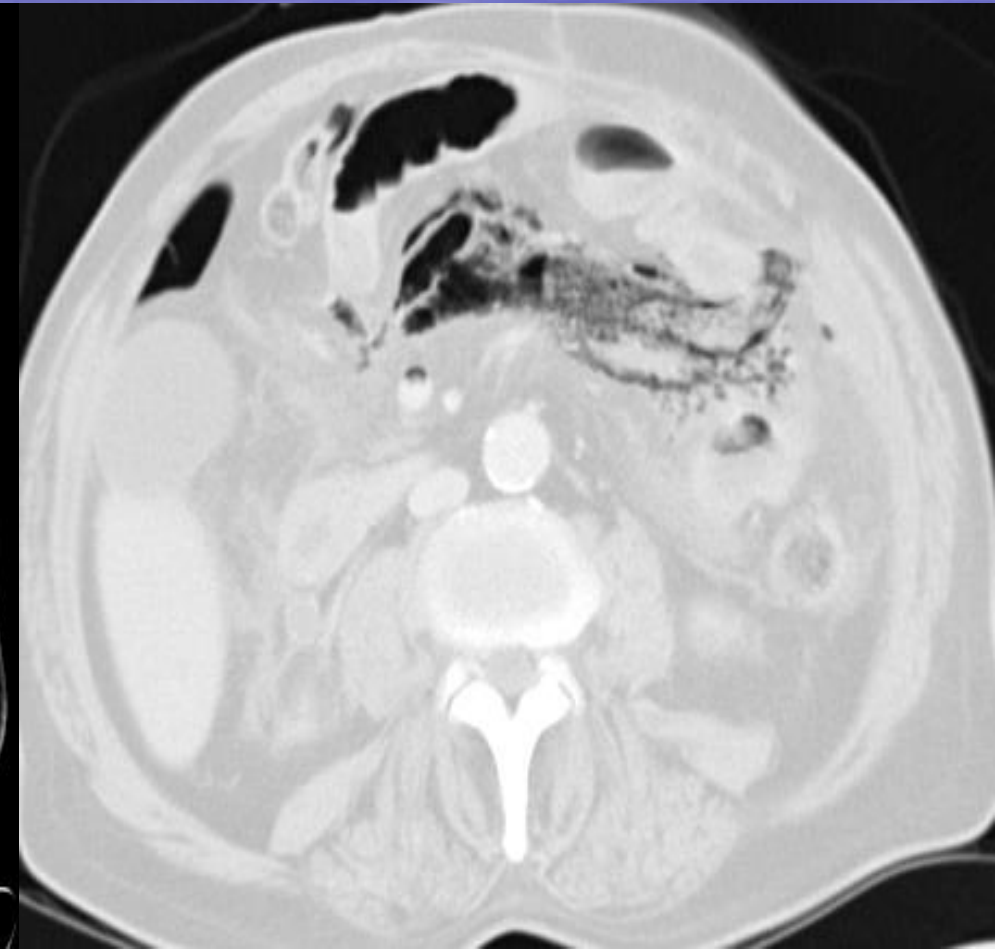




# CT scan

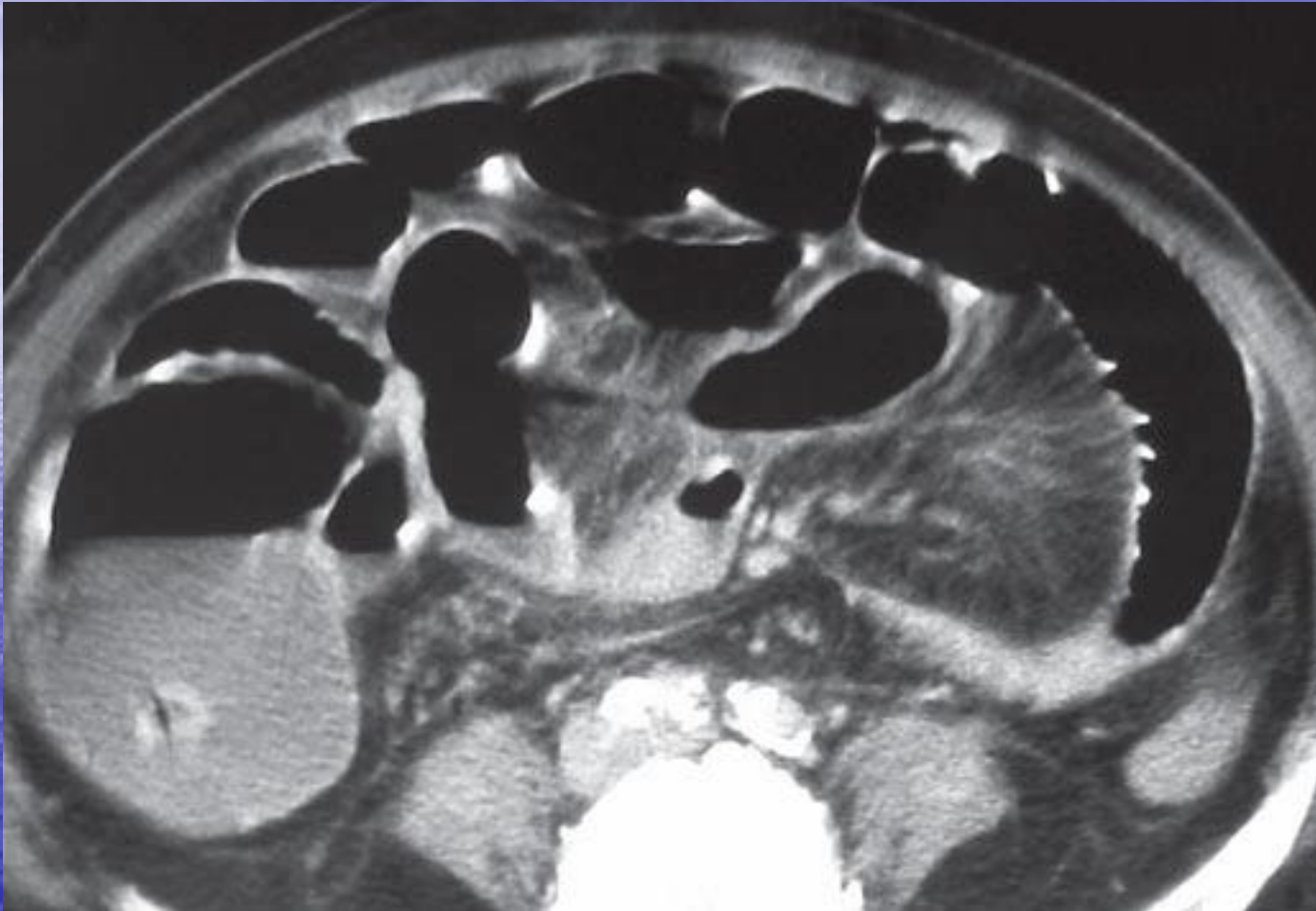


intramural gas abdominal windows



intramural gas lung windows

# CT scan

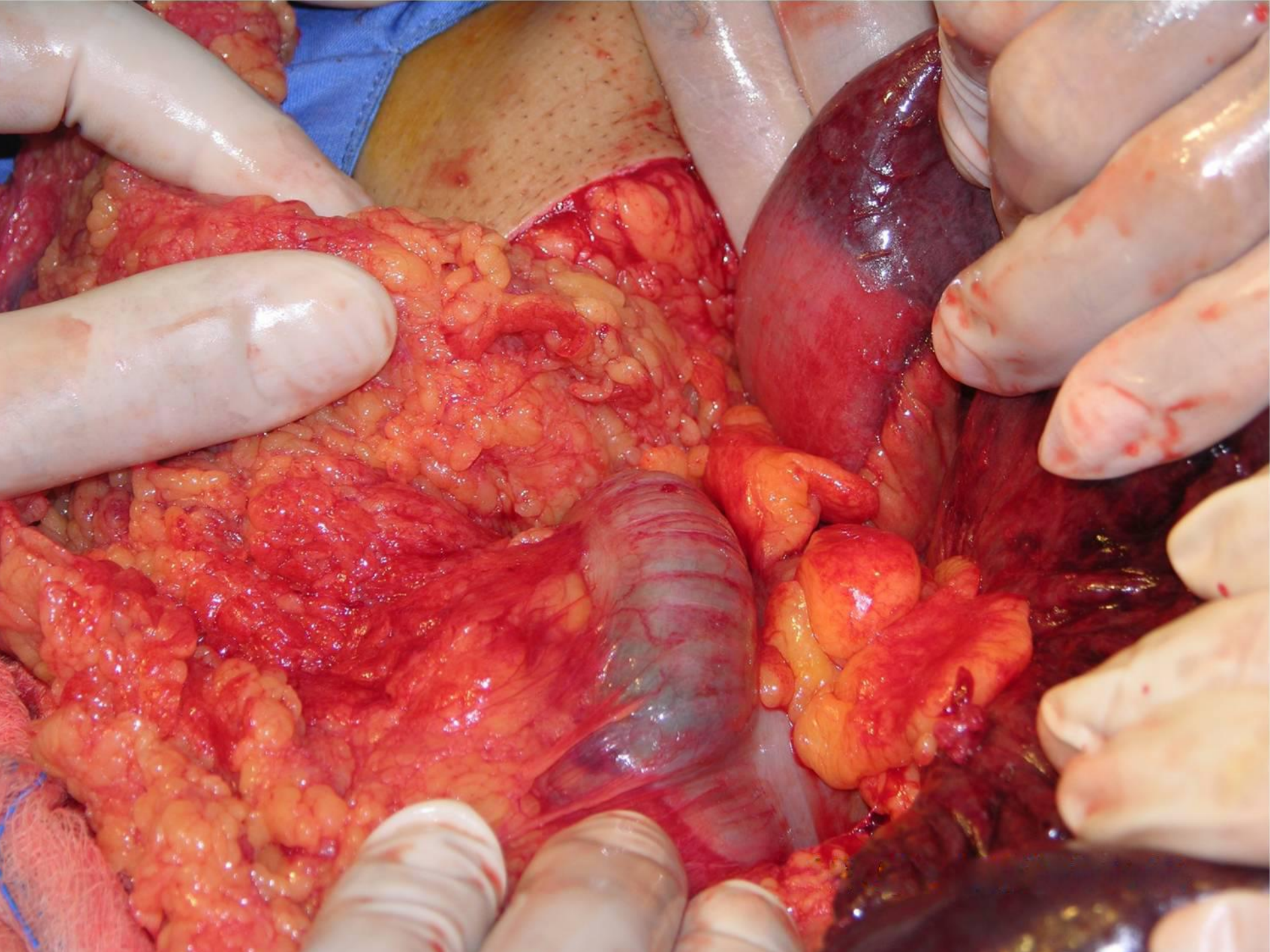


SMA  
embolism  
with paper  
thin  
ischaemic  
small  
intestine



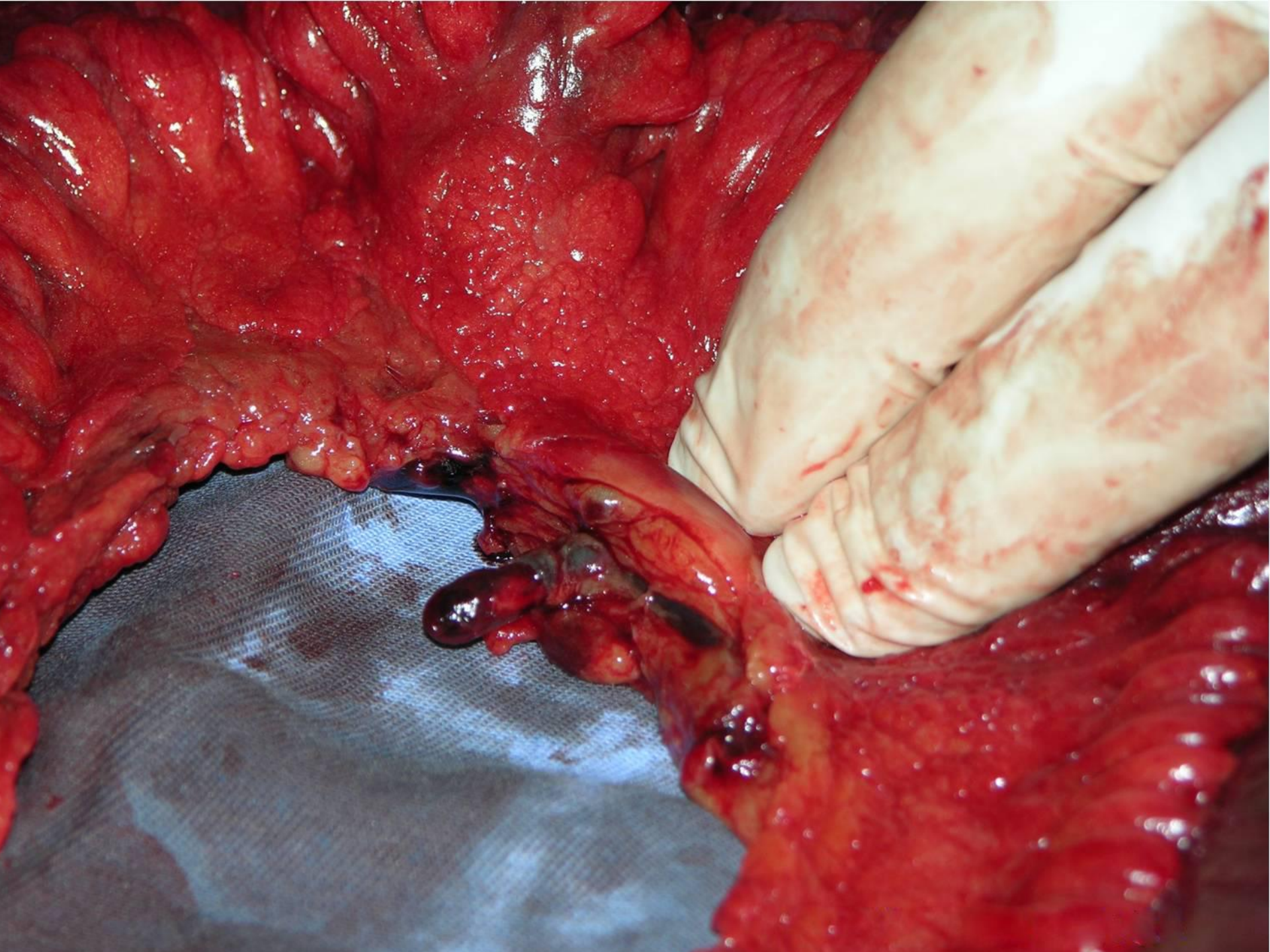
# What's next??















# Mesenteric Ischemia

Acute Mesenteric Ischemia

VS.

Chronic Mesenteric Ischemia

# Mesenteric Ischemia

## Pathophysiology

- **Acute Mesenteric Ischemia**
  - Arterial Embolism
  - Arterial Thrombosis
  - Vasospasm (none occlusive mesenteric ischemia, or NOMI)
  - Venous Thrombosis
- **Arterial occlusion accounts for about two-thirds**



# PATHOPHYSIOLOGY OF ISCHAEMIC GUT INJURY

- ISCHAEMIA
  - 75% of blood flow is to the mucosa which suffers first
- LOSS OF INTESTINAL MUCOSA
- BACTERIAL TRANSLOCATION & TOXIN RELEASE
- OEDEMA & THICKENING OF WALL
- SYSTEMIC EFFECTS – SEPTICAEMIA
- REPERFUSION INJURY





# Presenting symptoms in patients with acute mesenteric ischemia

<b><u>Presenting symptom</u></b>	<b><u>No</u></b>	<b><u>%</u></b>
Abdominal pain	69	96%
Nausea	40	56%
Vomiting	27	38%
Peritonitis	26	36%
Diarrhoea	22	31%
Tachycardia (HR 100 bpm)	22	31%
Arrhythmia	20	28%
Fever	15	21%
Hematemesis	13	18%
Constipation	6	8%
Evidence of shock	4	6%

( J Vasc Surg 2007;46:467-74.)

# Thrombosis versus Embolism

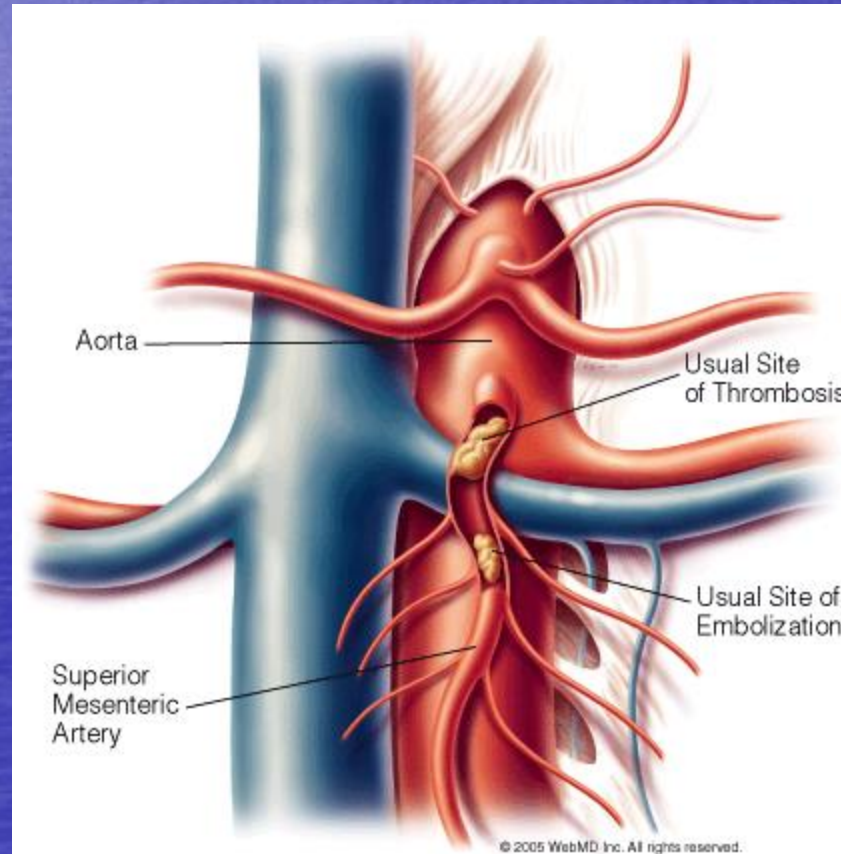
Proximal SMA Occlusion  
(Thrombosis)

Distal SMA Occlusion  
(Embolism)



# Mesenteric Ischemia

- Usual site for SMA thrombus vs. SMA embolus



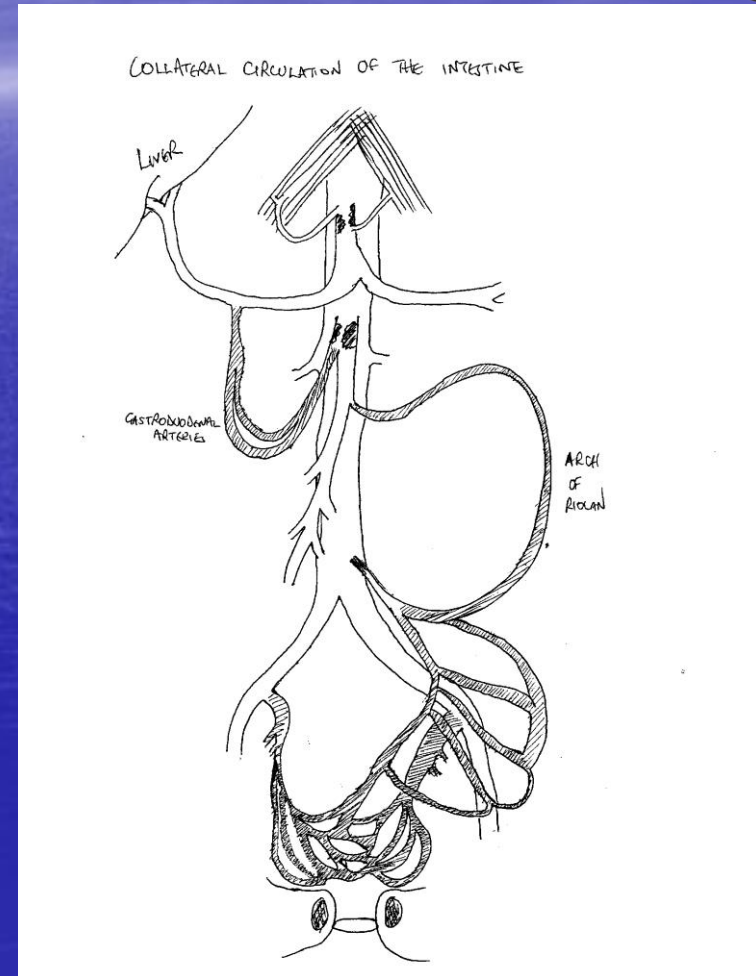
# Acute Mesenteric Arterial Thrombosis



- Progression of SMA stenosis to complete occlusion
- Typically female heavy smoker
- Similar presentation to SMA embolisation
- And in 65% there is a preceding history suggestive of chronic mesenteric ischaemia
  - Weight loss due to pain after eating (Food Fear)
  - Post-prandial, mid-abdominal relieved by vomiting
  - Constipation
  - Confusion with Ca pancreas, stomach etc.

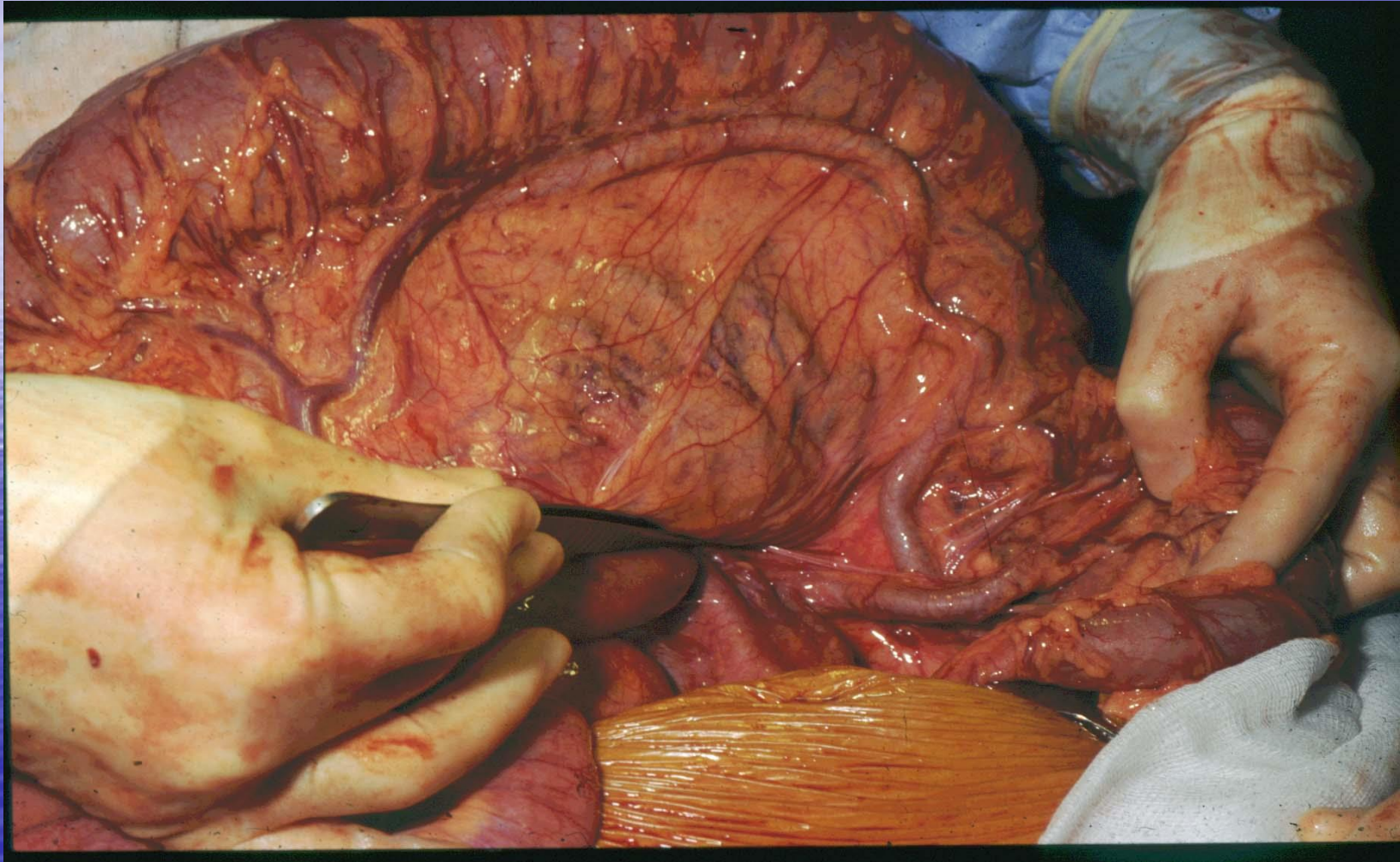
# Anatomical Considerations in Intestinal Ischaemia

- Extensive capacity to form collaterals
- Explains tolerance of vascular occlusion
- Different recognisable collateral circulations develop for the coeliac, SMA and IMA





# Artery of Drummond





# Laboratory test results at initial presentation

	<b>Embolism</b>	<b>Art thrombus</b>	<b>Venous</b>
● Lactate (mmol/l) <sub>a</sub>	6.57	8.35	4.46
● CRP (mg/l)	173.5	121.3	129.1
● WBC (gpt/l)	18.26	18.16	18.30
● Creatinine (umol/l)	87.6	114.68	108.52
● BUN (mmol/l)	9.40	9.99	11.70



# Mesenteric Vein Thrombosis

## Etiology

- **Inherited hypercoagulable states**

:

- Protein C deficiency
- Protein S deficiency
- Antithrombin III deficiency
- Hyperfibrinogenemia
- Polycythemia Vera

- **Acquired :**

- Inflammatory
- Smoking
- Oral contraceptive
- Malignancy/HIV
- Previous abdominal surgery
- Liver cirrhosis
- Idiopathic

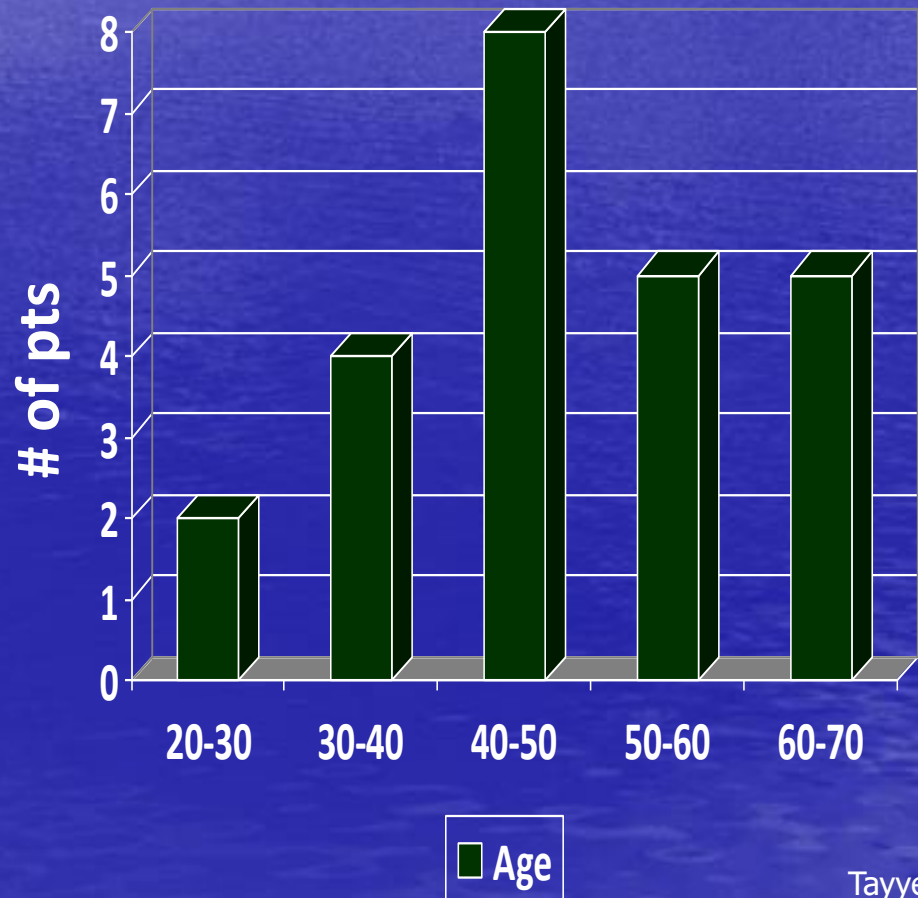
# 24 Patients with Mesenteric Venous Thrombosis in Qatar



## Distribution of Pts According to Age

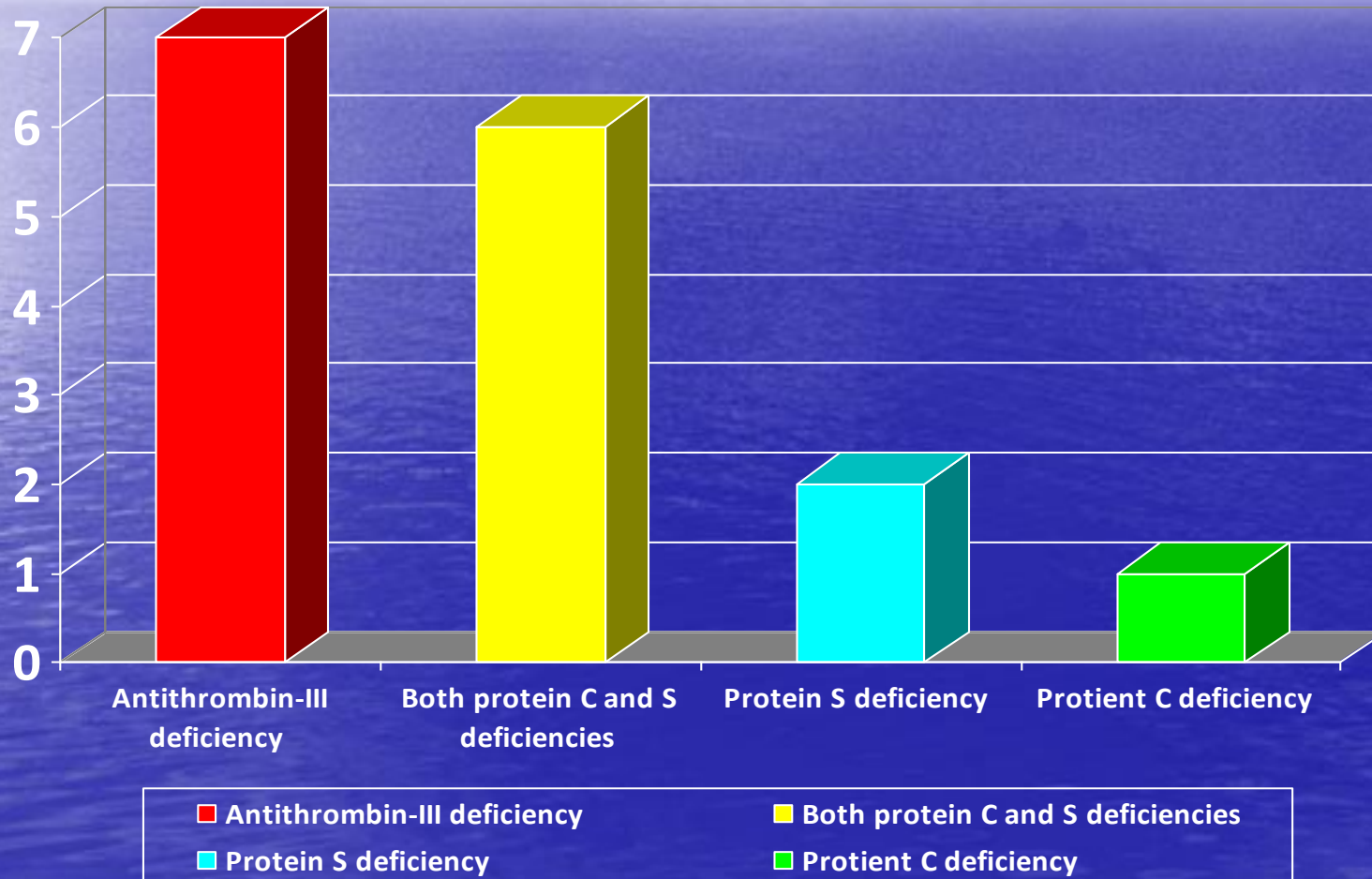


*J.El Mabrok, Hassan Al Thani*  
Hamad General Hospital  
Qatar  
**3rd Gulf Vascular Society  
Conference**  
**28 Feb- 1 March 2009**  
QATAR





# 24 Patients with MVT in Qatar



# Literature Review of Acute MVT

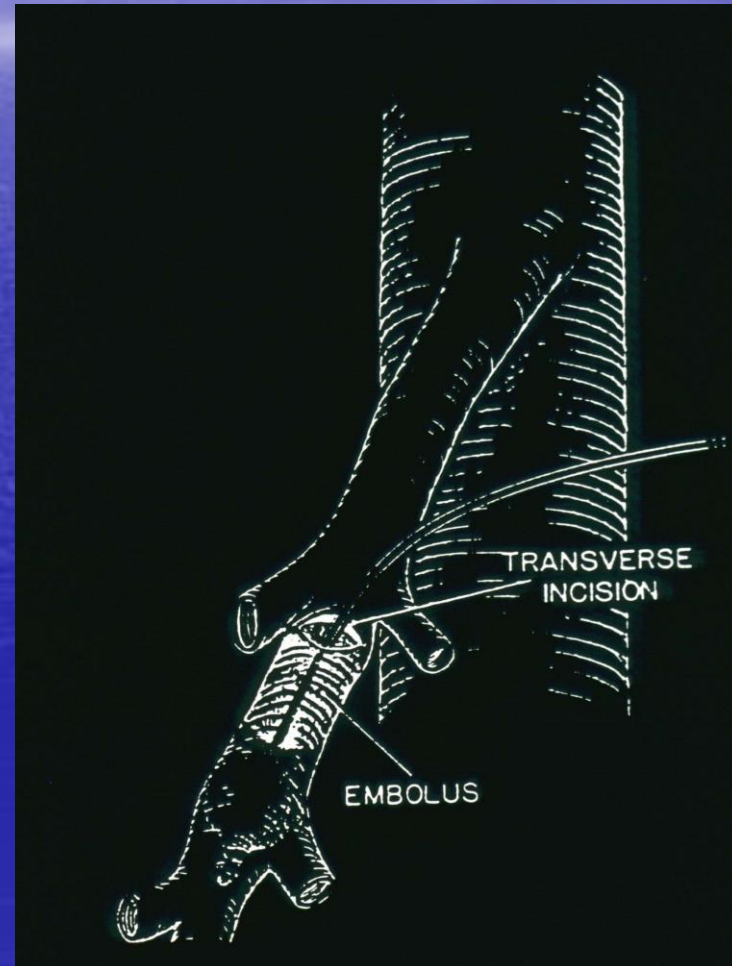
AUTHOR (YEAR)	NO. Pts	Bowel Resection	Non-operative	30-day Mortality %
Sack (1982)	9	9	0	22
Wilson (1987)	16	10	3	50
Montany (1988)	6	5	1	50
Clavien (1988)	12	12	0	42
Kaleya (1989)	22	22	0	32
Harward (1989)	16	5	11	19
Levy (1990)	21	19	2	38
Grieshop (1991)	15	5	10	13
Rhee (1994)	53	30	19	27
Morasch (2001)	23	8	14	30
Alam (2001)	68	61	7	26
Al-Thani (2009)	24	20	4	17
<b>Total</b>	<b>285</b>	<b>206</b>	<b>71</b>	<b>30.5</b>



# Treatment

# SUPERIOR MESENTERIC ARTERY EMBOLISATION: TREATMENT

- ANTICOAGULATION
- RESUSCITATE & CORRECT ACIDOSIS
- CT WITH CONTRAST
- EMERGENCY LAPAROTOMY
  - EMBOLECTOMY
  - REMOVE ISCHAEMIC GUT
- SECOND LOOK LAPAROTOMY





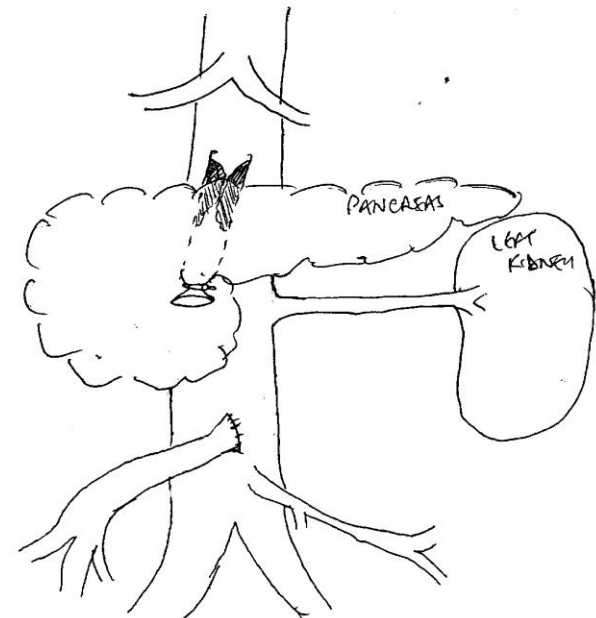
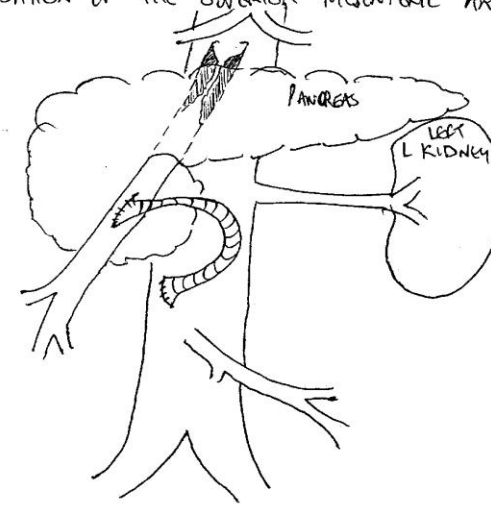


- **SMA Revascularisation**

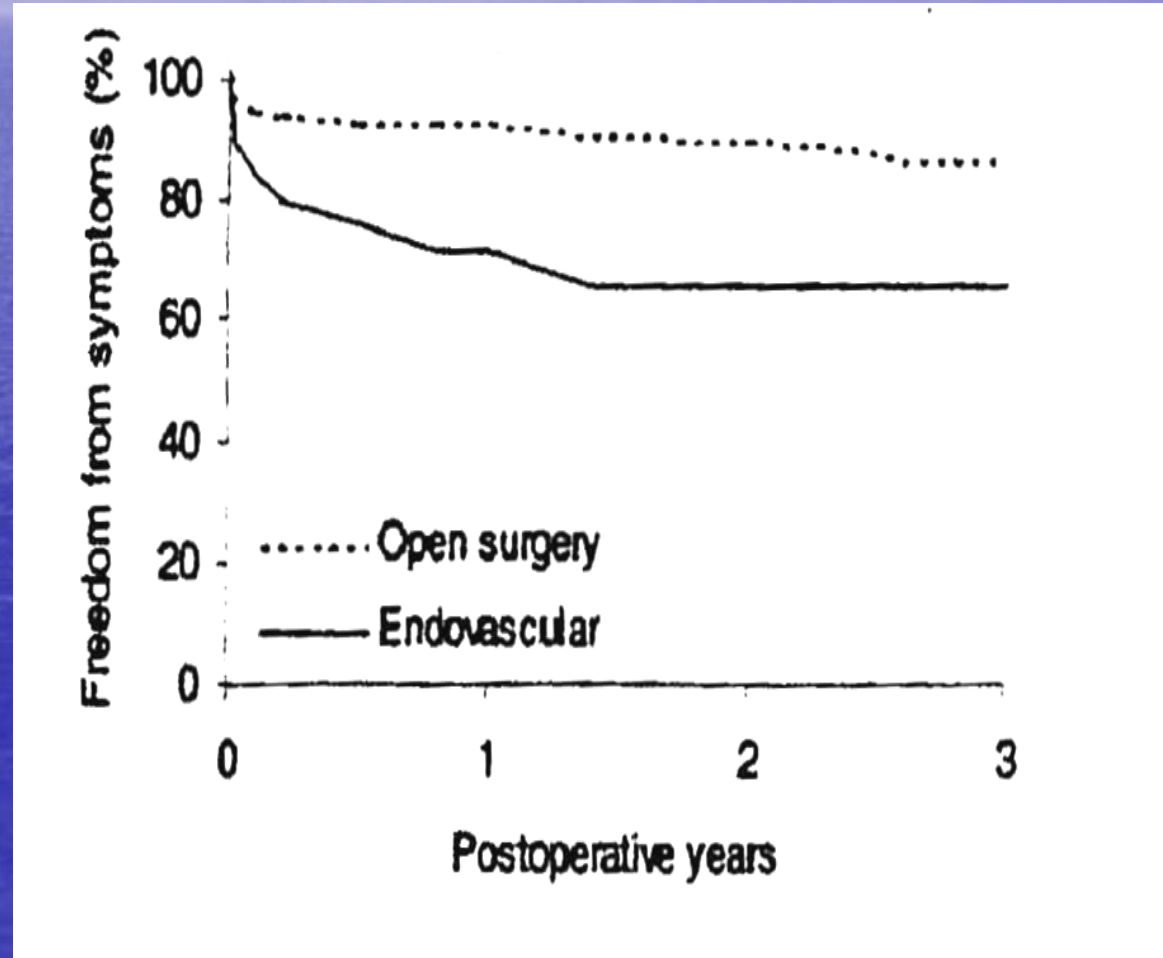
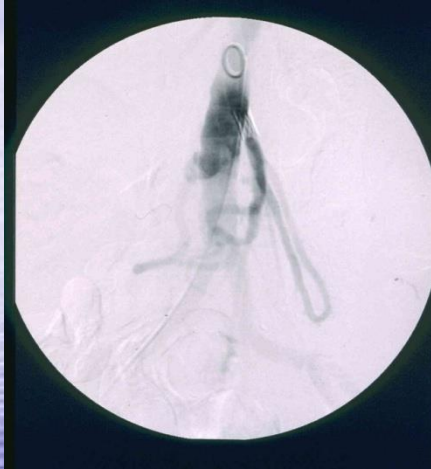
- Avoid prosthetic grafts in contaminated peritoneum

**Direct Re-Implantation of SMA**

REVASCULARISATION OF THE SUPERIOR MESENTERIC ARTERY

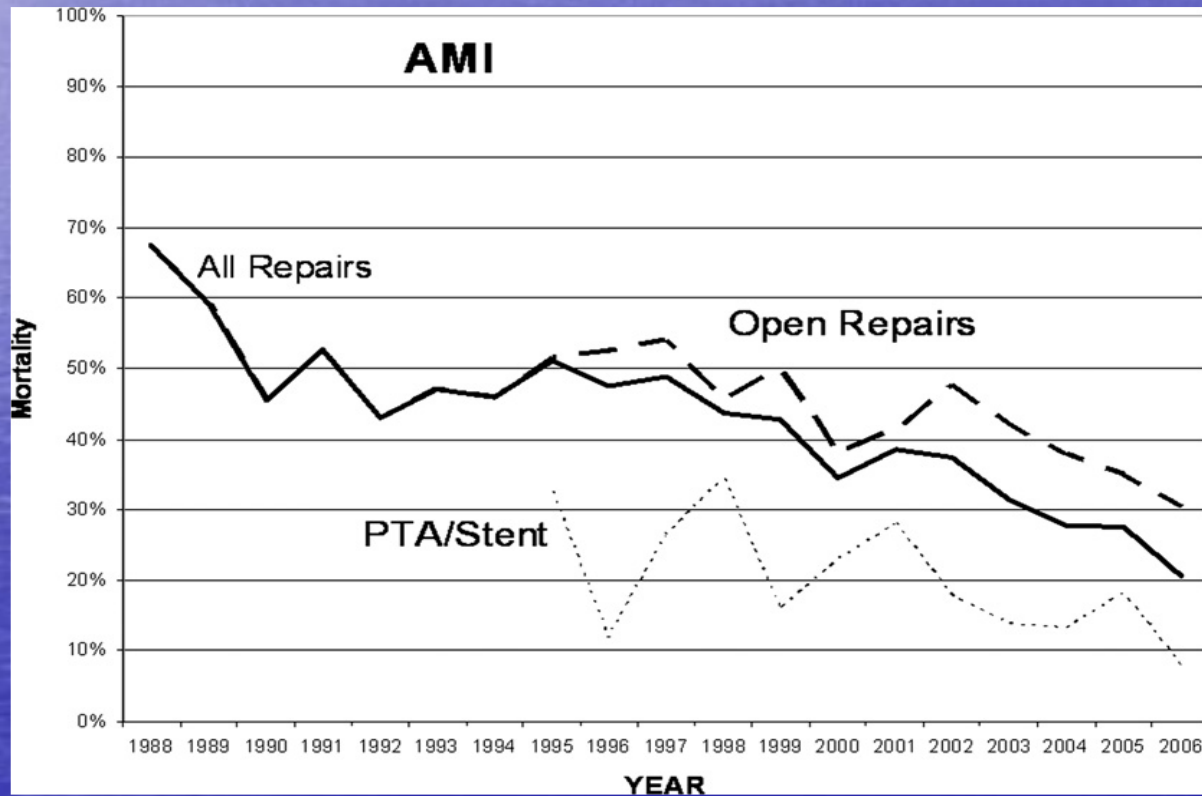


# Endovascular Treatment





# Mortality rate after *PTA/S*, compared with surgical repair for acute mesenteric ischemia (*AMI*) from 1988 to 2006.

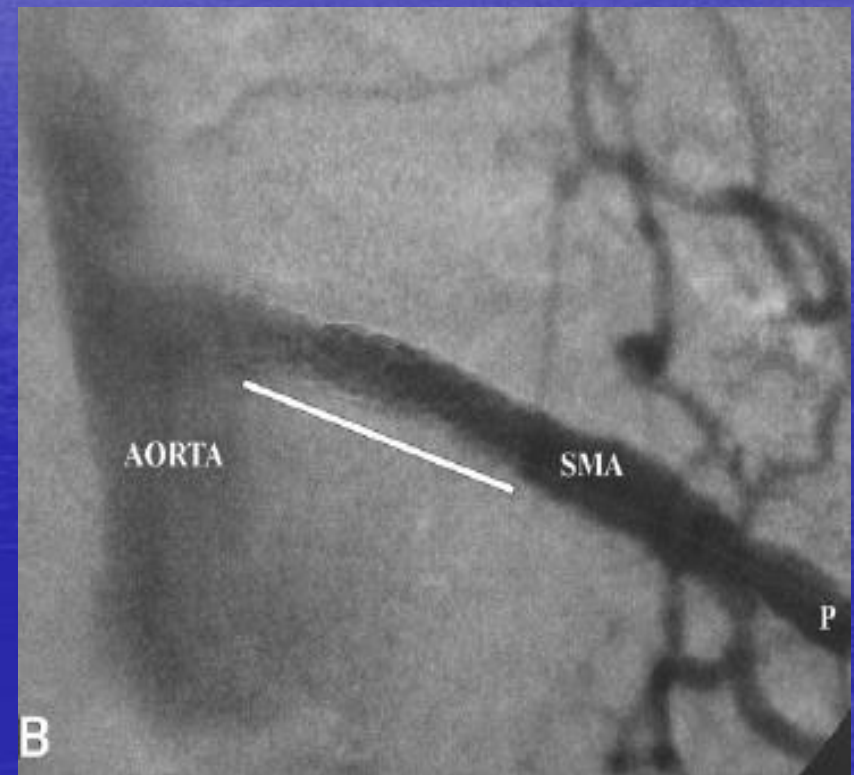
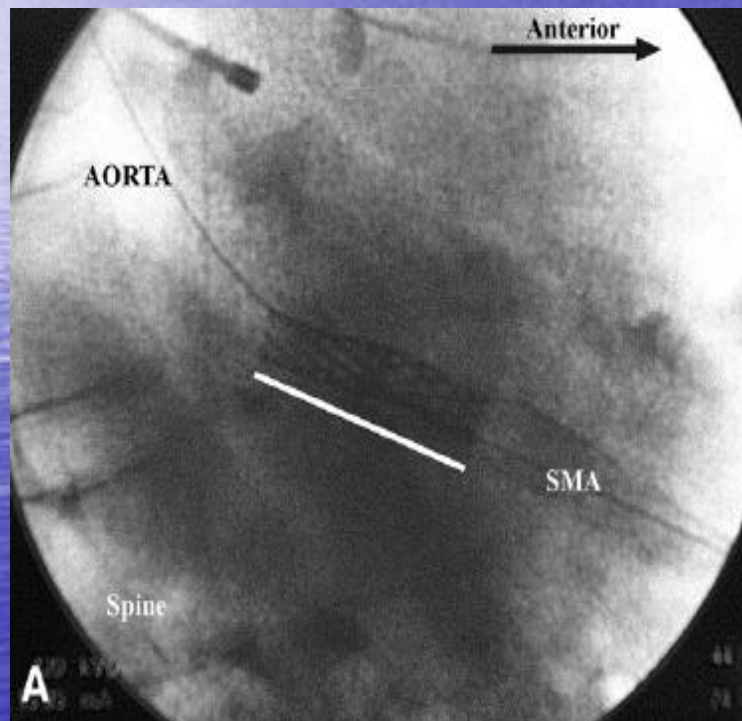


( J Vasc Surg 2009; Apr 15 epub )

# Retrograde mesenteric stenting during laparotomy for acute occlusive mesenteric ischemia

Mark C. Wyers, MD, Richard J. Powell, MD, Brian W. Nolan, MD, and Jack L. Cronenwett, MD, *Lebanon, NH*

(J Vasc Surg 2007;45:269-75.)



# Is there a role for laparoscopy in acute mesenteric ischaemia?

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*World J Gastroenterol* 2007 June 28; 13(24): 3350-3053  
*World Journal of Gastroenterology* ISSN 1007-9327  
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*RAPID COMMUNICATION*

## **Planned second-look laparoscopy in the management of acute mesenteric ischemia**

Hakan Yanar, Korhan Taviloglu, Cemalettin Ertekin, Beyza Ozcinar, Fatih Yanar, Recep Guloglu, Mehmet Kurtoglu



# Future Developments

- **Thrombolytic therapy for acute superior mesenteric artery occlusion.**

**Schoots IG, Levi MM, Reekers JA, Lameris JS, van Gulik TM.**

**J Vasc Interv Radiol. 2005 Mar;16(3):317-29**

- Systematic analysis of the available literature from 1966 to 2003 regarding thrombolytic therapy for superior mesenteric artery thromboembolism.
- 48 patients with acute superior mesenteric artery thromboembolism.
- Thrombolytic therapy of acute superior mesenteric artery thromboembolism resulted in angiographic resolution of the thromboembolism in 43 patients without requiring additional surgical intervention in 30 patients, and in survival in 43 patients,
- initial results appear to be promising.
- Thrombolytic therapy can be effective relatively quickly, may obviate surgery, and has the potential to resolve the clot completely. In some cases it can be used as an alternative or neo-adjunctive treatment modality to surgery.



# Survival according to aetiology

- **Systematic Review 3692 patients BJS 2004;91:17-27**
- Prognosis:
  - Better for MV thrombosis than MA embolism
  - Better for MAE than MA thrombosis or NOMI
- Surgical Mortality:
  - MAE & venous thrombosis 54.1 & 32.1%
  - MAT & NOMI 77.4 & 72.7%
- The overall survival of acute mesenteric ischaemia has improved over the last 4 decades



# Suspected Acute Mesenteric Ischaemia

