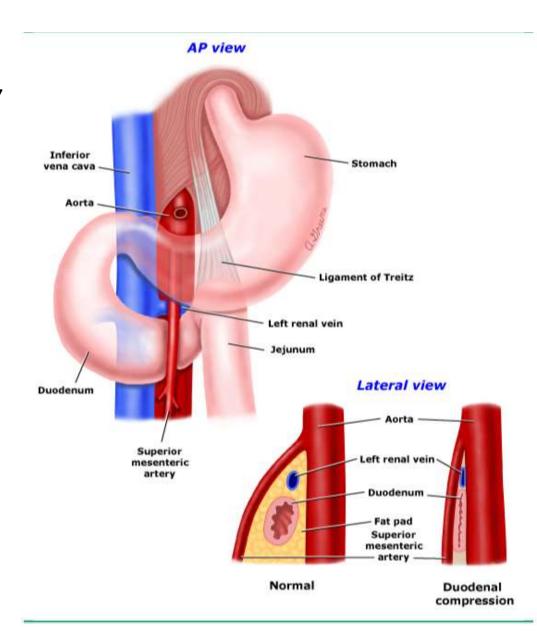
## SUPERIOR MESENTERIC ARTERY (SMA) SYNDROME

## SUPERIOR MESENTERIC ARTERY (SMA) SYNDROME

- Loss of mesenteric fat pad between the aorta and SMA
- Duodenal compression



## SMA SYNDROME – RISK FACTORS

- Weight loss due to medical / psychological disorders or surgery
  - Malignancy
  - Malabsorption syndromes
  - AIDS
  - Trauma
  - Burns
  - Bariatric surgery
  - Spinal cord injury, paraplegia
- Congenital or acquired anatomic abnormalities

## SMA SYNDROME - PRESENTATION

- Acute, subacute, or progressive
- Symptoms of proximal small bowel obstruction
  - Postprandial abdominal pain
  - Early satiety
  - Nausea, bilious emesis
  - Weight loss
  - Reflux
- Relieved by lying prone, left lateral decubitus, knee-chest position

## SMA SYNDROME – EXAM AND LABS

- Exam
  - Nonspecific diffuse abdominal pain
  - Abdominal distension
  - Succussion splash
  - High-pitched bowel sounds
- Labs
  - Normal or signs of volume depletion



- Electrolyte abnormalities
- Gastric perforation

## SMA SYNDROME – DX STUDIES

### **KUB**

- Gastric distension
- Abrupt vertical cutoff of air in 3<sup>rd</sup> portion duodenum

### Upper GI series

- Delay in passage of contrast from duodenum to distal small bowel
- Proximal duodenum and gastric dilation

## Transabdominal Ultrasound

 Measures the aortomesenteric angle

## CTA or MRA

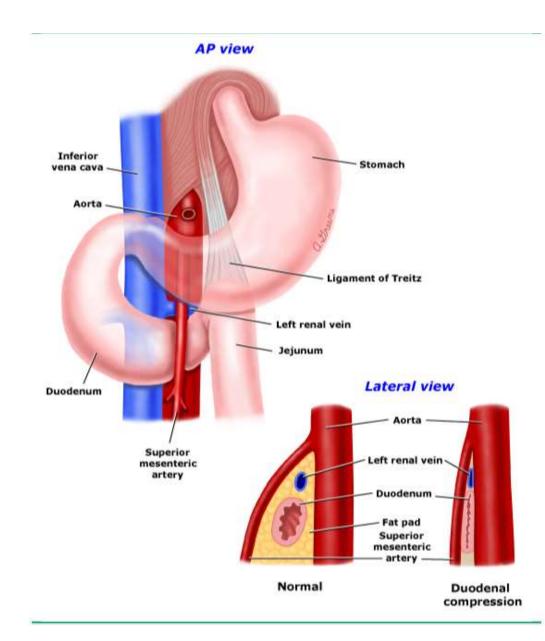
- Non-invasive
- Shows the amount of intraabdominal and retroperitoneal fat

## Arteriography

- Invasive
- Done if diagnosis remains unclear following other imaging studies
- Simultaneous with barium contrast radiography to show the SMA superimposed on barium-filled duodenum

# SMA SYNDROME – DX STUDIES

- Loss of mesenteric fat pad between the aorta and SMA
  - Normal ≰: 38° 65°
- Duodenal compression
- Imaging diagnostic criteria
  - Duodenal obstruction, abrupt cutoff in 3<sup>rd</sup> potion & active peristalsis



## SMA SYNDROME - TREATMENT



Conservative

- Nasogastric tube and decompression
- Correction of electrolyte abnormalities
- Nutritional support
  - Enteral via NJ feeding tube, distal to obstruction
  - Parenteral nutrition if enteral not option
  - Multidisciplinary approach:
    - Dietician
    - Psychiatry

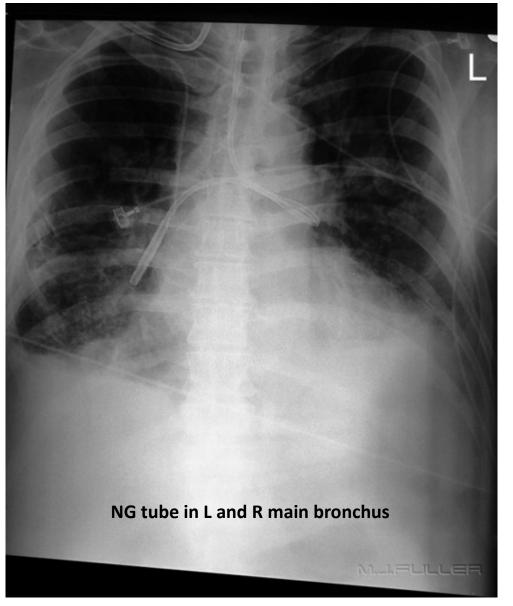
Surgica

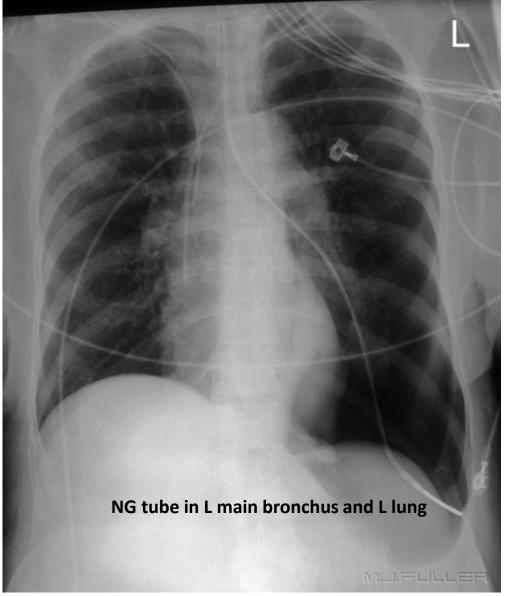
Only if conservative management not sufficient despite weight gain

# CONFIRM NG TUBE PLACEMENT

- X-ray viewing field: See upper esophagus and below the diaphragm
- NG tube
  - Remains midline
  - Bisects carina
  - Tip is visible below the diaphragm







#### CC: Abdominal pain

HPI: 35 y/o woman.

- 1 day prior to admission, sharp and across her lower abd.
- Pain started after eating breakfast
- ~30lb weight loss over 6 months.
- Denied radiation of abd pain. -Endorsed nausea, denied vomiting.
- Denied constipation or diarrhea (ostomy output at baseline).
- Hx of PEG tube

Rest of ROS negative.

PMH: Neuromyelitis optica c/b functional quadriplegia and vision loss (trached, dependent on vent at night, chronic suprapubic urinary catheter), Depression / Anxiety SH: Endorsed medical marijuana use. Denied current or past use of ETOH, tobacco, or other drugs. **ALLERGIES: NKDA** 

## **MEDS:**

- Alprazolam 0.5mg BID
- Carbamazepine 200mg BID
- Cyclobenzaprine 10mg daily
- Duloxetine 120mg daily
- Eculizumab 1200mg daily
- Gabapentin 300mg qAM, 300mg qPM, 600mg qHS
- Hydroxyzine 10mg daily
- Oxybutynin 10mg daily

#### PHYSICAL EXAM:

Tmax: 36.7C, BP: 111/77, HR: 101, RR: 16, SpO2: 100% on RA General: Anxious appearing, lying flat in bed, otherwise in NAD

**HEENT:** PERRL, EOMI, MMM, trach in place

CV: tachycardic rate and regular rhythm, no M/R/G

Pulm: unlabored breathing on room air, CTAB

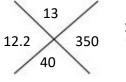
GI: mildly distended, normal bowel sounds, soft, tender to light palpation in all quadrants but worse in lower quadrants, PEG scar, colostomy in place with brown stool

MSK: 1+ pulses, well perfused

**Neuro:** AOx3, answering questions appropriately, only able to move

facial muscles

#### LABS:



139 102 3.1 26 0.2

0.3 20

Lipase: 152 (nml) Lactate: 0.7

Urine preg: negative

UA

SG: 1.015 1+ protein

Nitrites: negative

1+ LE

5-10 WBC / HPF 11-20 Squam Cells Occasional bacteria Covid-19: negative

Blood cultures x2 No growth x5 days

## Urine culture

Mixed urogenital flora 2. Uterine fibroids.

#### CT Abd/Pelv W Con

6.7

4.1

0.3

12

100

- 1. Stomach and duodenal distention with transition point seen at the SMA. This is suspicious for SMA syndrome.
- 3. Suprapubic catheter in appropriate position.
- 4. Likely R hemorrhagic ovarian cyst.

#### PROBLEM REPRESENTATION:

Young woman w/ hx of neuromyelitis optica, depression / anxiety, recent significant weight loss, presenting with acute abdominal pain and PO intolerance.

**DIAGNOSIS: Superior Mesenteric Artery (SMA) Syndrome** 

#### **LEARNING POINTS:**

- SMA syndrome: Loss of mesenteric fat pad between the aorta and SMA  $\rightarrow$  compression of duodenum  $\rightarrow$ proximal intestinal obstruction
- Risk factors
  - Significant weight loss due to medical / psychological disorders or surgery
  - Anatomic abnormalities (congenital vs acquired)
- Diagnosis
  - Plain abd film, PO contrast studies, and/or CTA vs MRA
  - Imaging diagnostic criteria
    - Duodenal obstruction w/ abrupt cutoff in the 3<sup>rd</sup> portion and active peristalsis
    - Aortomesenteric artery angle of ≤25°
- Treatment
  - Conservative
    - GI decompression, correct electrolyte abnormalities (watch for refeeding!), nutritional support (for weight gain)
  - If conservative fails, surgical
    - Strong's procedure, gastrojejunostomy, duodenojejunostomy