Stitelman’s Surgery Shelf Review

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General Advice

• Get sleep

• 2 hrs 30 min/100 Questions=1.5 minutes/Question

• Start of the exam has the hardest questions

• Resuscitate (ABC’s)/Diagnose/Treat

• Age of Patient/Time course/Severity

• Have Faith in your Education!!!!!
A 60 year old man presents to the Emergency Room vomiting bright red blood. He is afebrile, heart rate is 120, blood pressure is 90/60. He has moderate epigastric tenderness. The next step in management is:

A. Emergent exploratory laparotomy
B. IV Ranitidine
C. Rapid infusion of 0.9% saline IV
D. Nasogastric lavage
E. Emergent endoscopy
Normal Films

- spinal process
- scapula
- anterior rib
- bronchial bifurcation
- vascular hilum
- posterior rib
- right atrium
- liver
- trachea
- clavicle
- aortic knob
- left bronchus
- hilum
- descending aorta
- diaphragm
Normal Films
Normal Films
SBO
Colon cancer

Apple-core lesion
Gallstone ileus

Pneumo-bilia
Sigmoid Volvulus

“Bent inner tube”
Achalasia

“Birds beak appearance”
Chest X-rays

Simple PTX
Chest X-rays

Tension PTX
Chest X-rays

Free Air
Chest X-rays

Hiatal Hernia
Chest X-rays

Subtle Hiatal Hernia – retrocardiac soft tissue mass

More Obvious Hiatal Hernia with air-fluid levels
Chest X-rays

Atelectasis/PNA
Chest X-rays
Chest X-rays

CHF/ARDS
Skin Stuff

Melanoma

Basal Cell CA

Squamous Cell CA

TNM stage?
Margins?

Types? Superficial spreading (most common), nodular (most aggressive), acral lentiginous (palms/soles), lentigo maligna (Hutchinson’s freckle)
Location?

Hemangioma

<table>
<thead>
<tr>
<th>1st degree burn</th>
<th>Sunburn</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd degree burn</td>
<td>Blisters</td>
</tr>
<tr>
<td>3rd degree burn</td>
<td>Deep below dermis</td>
</tr>
</tbody>
</table>
Brain and Nerves

- Alcohol Withdrawal: 1-3 days after last drink/agitation
  - Usually > 48 hours post-op, fevers, MS changes, diastolic HTN, tachycardia, tremors, hallucinations
  - Tx: serax/ativan

- Epidural hematoma has a lucid interval
  - Middle meningeal artery injured sheared
  - Lens shaped deformity

- Carotid stenosis presents with emboli
  - Operate for 70-99.9% stenosis if symptomatic
  - Operate for >80% stenosis if asymptomatic...not in women

- Arm movement causing syncope is subclavian steal

- Deep Peroneal Nerve injury (anterior compartment)
  - Foot drop/ Numb dorsum of foot (1st and 2nd toes)

- Lidocaine v Procaine (Amides 2 “I”s, ester=PABA)
Acute subarachnoid hemorrhage

Epidural hematoma

Acute subdural hemorrhage

Acute subarachnoid hemorrhage

Non-contrast Head CT so you can see blood!!!!

Focal vs Diffuse neuro signs
Heart

- Stress/Cath if coronary concern
- ECHO if valve concern
  - Mitral Stenosis blame Rheumatic Fever

- CHF = High PCWP
- ARDS = Low/NL PCWP
  ARDS criteria?? b/l infiltrates, PCWP<18, & PaO2/FiO2 ≤200.

- MI 5 or so days ago and DECOMPENSATE??
  Papillary muscle rupture/MR
  VSD: new, harsh loud holosystolic murmur
  LV rupture
Peds Cards

• Note if the child is BLUE??
  Noncardiac vs non-cardiac

4 Ts - Tetrology of Fallot
  Truncus arteriosus
  TGA
  Tricuspid valve

• Coarctation has
  – Variable BP/Pulses
  – Rib Notching
  – Associated with Turner’s
# Shock

<table>
<thead>
<tr>
<th>Type</th>
<th>Cardiac Output</th>
<th>Systemic Resistance</th>
<th>Filling Pressure (CVP/PCWP)</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypovolemic</td>
<td>Low</td>
<td>High</td>
<td>Low****</td>
<td>Volume</td>
</tr>
<tr>
<td>Cardiogenic</td>
<td>Low***</td>
<td>High</td>
<td>High</td>
<td>Inotrope Fix Heart</td>
</tr>
<tr>
<td>Distributive (Septic)</td>
<td>High</td>
<td>Low****</td>
<td>Normal</td>
<td>Pressors Fix Pt</td>
</tr>
</tbody>
</table>

Tamponade/Tension PTX has Low CO/High CVP
Neurogenic shock = lose sympathetic drive, low SVR, low CO
Vascular

- Abdominal Aortic Aneurysm (AAA)
  - Operate when > 5.5cm if risk OK
  Contraindications to EVAR?

- Thoracic Aortic aneurysm (TAA)
  - Operate when > 7cm if risk OK

  Oversimplification: Increased rupture risk for Ascending at 6 cm and for Descending at 7cm; so open repair at 5.5 and 6.5, respectively.

- Aortic Dissection
  - *Ascending* needs operation NOW
  - *Descending* only operate if organ dysfunction/rupture/aneurysm
Vascular

- Venous ulcers are around malleolus
- Venous problems cause swelling

- Arterial ulcers are distal
- Arterial lesions do not swell

- Vascular pain is predictable
- Treat Claudication with exercise & no smoking
  - Then ABI.......Then dye study
    - $\text{ABI} < 0.9$ – claudication
    - $\text{ABI} < 0.6$ – rest pain
    - $\text{ABI} < 0.5$ - ulcers
Lung

- Remember ABC’s
- Review Lung Volumes
- Thoracic Duct injury = Milky chylous effusion
- SOB after a Central line is a Pneumothorax!!!!
- Tachy/R heart strain/Desaturation is PE

- Ship Yard/Asbestos=Mesothelioma (pleural)

Asbestos bigger risk factor for lung cancer or mesothelioma?
<table>
<thead>
<tr>
<th>pH</th>
<th>pCO2</th>
<th>pO2</th>
<th>HCO3</th>
<th>Dx</th>
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</thead>
<tbody>
<tr>
<td>7.4</td>
<td>40</td>
<td>100</td>
<td>23</td>
<td>NL?</td>
</tr>
<tr>
<td>7.2</td>
<td>50</td>
<td>100</td>
<td>25</td>
<td>Resp Acid</td>
</tr>
<tr>
<td>7.2</td>
<td>30</td>
<td>100</td>
<td>18</td>
<td>Met Acid</td>
</tr>
<tr>
<td>7.5</td>
<td>30</td>
<td>100</td>
<td>20</td>
<td>Resp Alk</td>
</tr>
<tr>
<td>7.5</td>
<td>50</td>
<td>100</td>
<td>28</td>
<td>Met Alk</td>
</tr>
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</table>
Esophagus/Stomach

- Zenker’s -- Regurgitation/Smelly Breath
  - UGI/Swallow -> Cut the cricopharyngeus

- Hiatal Hernia -
  - Types?
  - Sliding does not need operation (type 1)
  - Paraesophageal (type 2) needs OR – symptom

- Cough with high BMI can be reflux

What is Boerhaave’s syndrome?
Esophagus/Stomach

- EGD with Barrett’s needs antacid/antireflux
  - What is Barrett’s?
  - High-grade dysplasia/CA need esophagectomy

- EGD with pain and fever after needs swallow
  - Free contrast into mediastinum needs drainage
  - Small tear without perforation can be observed
Liver

- Cirrhosis
  - High incidence of HCC

- Portal Vein Thrombosis
  - OCP/Cirrhosis
  - Esophageal Varicices/Hemorrhoids/Splenomegaly
Biliary

- Cholecystitis does NOT make you YELLOW!!!!!

A. Cholelithiasis (Gallstone) Biliary Colic
   OR Electively

B. Cholecystitis >4 hours of Pain
   US->Gallstone, Thick GB, “pericholecystic fluid”, sonographic Murphy’s
   Antibiotics and OR soon

C. Choledocholithiasis
   High Alk Phos & T bili
   US-> Dilated CBD

D. Cholangitis-CBD stone & INFLAMMATION!!!!
   RUQ pain/Jaundice/Fever/ CAN GET VERY SEPTIC!!!!!!!
   Dilated CBD/High Alk Phos&Tbili
   Antibiotics and ERCP Decompression

E. Gallstone Pancreatitis
   Cholecystectomy when Amylase/Lipase/Sx normalize

F. PSC (Primary Sclerosing Cholangitis)
   Intra and Extra Hepatic Ducts
   High Alk Phos

G. PBC (Primary Biliary Cirrhosis)
   Intra Hepatic Ducts
   High Alk Phos
Pancreas

- Pancreatic CA
  - Painless Jaundice
  - Weight Loss
  - Left supraclavicular LAD
  - Distended, palpable gallbladder
  - Periumbilical nodule

- Pancreatic Pseudocyst
  - Due to Pancreatitis
  - Drain perc vs open (cystgastrostomy) (wait 6 weeks), > 6cm
Gut

- Bleed/Obstruct/Perforate/Cancer/Intractable
- Words like “free air” “rigid abdomen” go to OR!

- SBO- Vomit. No BM. No Flatus. Distended. +KUB
  - OR for Complete SBO/Incarcerated Hernia/Fever
  - NG if partial

- “Pain out of proportion to exam”/A Fib/High WBC
  - Think Mesenteric Ischemia
  - **Causes:** embolus, thrombosis, low flow
Gut

• Pain in Appendicitis
  – Early is visceral pain localizing to belly button
  – Late is RLQ pain from inflammation against abdominal wall.
  – E. Coli is common in perf appy

Can you manage appendicitis non-operatively?

• Ileum resection -> diarrhea
  – less bile salt absorption/less fat absorption

• “If the gut works use it!”

• NPO/TPN for fistula closure. ?FRIENDS
Peds Surg

- Child with acute SOB=peanut down wrong pipe
- Pyloric Stenosis--Non bilious Vomiting
  - Treatment?? pyloromyotomy
- Malrotation--Bilious Vomiting!!!-->Emergency!!
- Intussusception-->”Knees drawn up”
  - Currant jelly stool is usually late
  - Treatment?? Enema: air or gastrograffin
  - Peritonitic?? OR!!
  - Adult → OR
Colon

• UC colon dysplasia -> TOTAL colectomy

• UC v Crohn’s

• Ectomy v Ostomy v Otomy v Oscopy

• Pelvic dissections can ruin sex and peeing
Anorectal

- Diarrhea but hard stool by DRE/KUB->Enema

- Anal Pain is...
  - Thrombosed External hemorrhoid
  - Anal Fissure
  - Perirectal abscess (Pilonidal cyst is superior)
Renal

• UO <30/hr give NS/LR unless CHF
  – Urine Specific Gravity is normally 1.010 to 1.025
  – Indications for Dialysis?

• Know about renin/aldosterone (hold Na/waste K)
  – Renin released in response to… low BP
  – Renal artery stenosis (HTN and one small kidney)
  – Pheo (10% rule?), what are sx?
    • Must alpha-block before beta blockade
Renal

- Blood in urine
  - Pain is a stone.
  - No pain is CA (renal/bladder/prostate)

- Renal Transplant failure
  - Minutes  --> Hyperacute rejection (preformed antibody)
  - Hours    --> Poor bloodflow vs ATN
  - Week/Months--> Acute rejection (T cells**/Eosinophils/Plasma Cell/PMN)
  - Months/Years--> Chronic rejection (Vascular fibrosis)

- Transplant meds
  - Azathioprine/Mycophenylate (Imuran/Cellcept)
    - Inhibit purine synthesis, inhibits T cells
  - Cyclosporine/Prograf (FK-506/Tac)
    - Inhibit genes for cytokine synthesis (by binding cyclophilin or FK-binding proteins)
Electrolytes

- **High Calcium >11**
  - "Bones, stones, groans, and psychiatric overtones"
  - Short QT
  - DDx (Hyperparathyroid (adenoma vs hyperplasia/CA/Sarcoid))

- **Low Calcium**
  - Trousseau/Chvostek’s (cheek) sign
  - Long QT

- **High Potassium → 5.5 Wide QRS/Peak T**
  - **Deadly!!
  - C BIG K Drop = Calcium/Bicarb/Insulin&Glucose/Kayexylate/HD/(Lasix&Fluid)

- **Low Potassium**
  - Flat T/ Long QT

- **TPN**
  - Protein is 1-2 g/kg=70-140g protein
  - Fat is 9cal/gram. Carb/Protein is 4cal/gram
Endocrine

• Adrenal Masses > 4cm or functional come out

• FNA thyroid masses!!!!!!!
  – If follicular neoplasm, need lobectomy with possible completion

• Gastrinoma
  – High Acid/High Gastrin/Stays High with Secretin

• Insulinoma - FS <30 with high normal insulin level
  – Self insulin administration has low “C-peptide”

  – Nephrogenic versus central (trauma, neurosurgery)

• SIADH - High ADH. Hold Water. Low blood Na. +/- brain hurt
  – Causes: cancer (SCLC, CNS disorder)
Endocrine

**MEN I** – 3 P’s, menin gene
- Parathyroid (hyperplasia – first sx, first tx)
- Pituitary (prolactinoma)
- Pancreas (islet cell tumors, MC gastrinoma)

**MEN II** – ret protooncogene
- **MEN IIa**
  - Pheo (tx first)
  - Medullary cancer (thyroid, check calcitonin)
  - Parathyroid hyperplasia
- **MEN IIb**
  - Pheo (tx first)
  - Medullary thyroid cancer
  - Mucosal neuromas/Marfan’s habitus
Hematology

- Anemia with an MCV that is…
  - High = B12/Folate Deficiency
  - Normal = Acute blood loss/Hemolytic/Bone marrow failure/Chronic Dz
  - Low = Iron Deficiency /Hemoglobinopathy/Chronic Disease

- Coumadin
  - Factors II, VII, IX, X (Vitamin K dependent factors)
  - Protein C and Protein S (warfarin-induced skin necrosis)
  - Reversal (Vit K – 6 hours, FFP – immediate)
  - Check PT/INR

- Heparin (binds ATIII)
  - IV heparin is for treatment
  - SQ heparin is for prophylaxis
  - Check PTT
  - HIT (prothrombotic, tx argatroban or lepirudin)
Hematology

• Aspirin
  – Inhibits Platelets
  – Prolonged Bleeding Time
  – Non-reversible (can give platelets if need stat OR)

• Plavix
  – Inhibits platelets

• IVC filters
  – for GI/Head Bleed or Failed Anticoagulation
  – Still recommend lifelong anticoag

• DIC
  – Consumptive coagulopathy
  – “Bleed from IV sites”
  – ↑PTT, INR… ↓Platelets, Fibrinogen

• Multiple units of blood transfusion need Plts/FFP
  – Can also cause hypocalcemia → persistent hypotension
Spleen

• Splenic Vein Thrombosis
  – S/P pancreatitis
  – Gastroesophageal Varices with NL Liver
  – Rx = Splenectomy

• Accessory Spleen
  – Absence of Howell-Jolly bodies s/p splenectomy
  – Need Spleen scan
  – MC location: splenic hilum

• Post-splenectomy Sepsis (OPSS)
  – S Pneumo  Prophylaxis=Penicillin  Rx=Vanco/Cefepime
  – N Meningitis
  – H Influenza  When to give?

• Sickle Cell – spleen autoinfarcts, no need for resection
Infectious Disease

- Drain pus (Septic joint/Abscess)
- HIV & bloody diarrhea is CMV
- Gram Positive Cocci
  - in Pairs is Strep
  - in Clusters is Staph
- Necrotizing fasciitis – *look for in pts with POD #0 & high fevers!*
  - Group A Strep/Clastridium/Polymicrobial
- Artificial Heart valve prophylaxis with Amoxicillin
- Fungus in a blood culture is NEVER a contaminant
  - Typical story – pt with PICC line on TPN
- Clostridium difficile –
  - Pt with diarrhea, high WBC (>30), abd pain
  - Check stool toxin
  - Tx: Flagyl (IV/PO), Vanco (PO, can be used for pregnant women)
Testes/Ovary

- Undescended Testicle -- Get to scrotum by 1yr
  - Cancer risk unchanged, but have better surveillance

- Scrotal Swelling
  - Hydrocele -- Bag of fluid, Can transilluminate
  - Indirect Hernia -- Hernia sac & contents, No transillumination
  - Hesselbach’s Triangle – rectus, epigastrics, inguinal lig

- Testicle Pain -- Get Ultrasound for blood flow
  - Torsion -- No blood flow-->Need operation (need B pexy!)
  - Epididymitis -- Has blood flow-->Feels better with lifting

- Suspect Ovarian torsion --> Need pelvic US
  - Torsion needs an operation
Breast

- **DCIS** -- Precancerous …. found on mammography
  - Core needle biopsy
  - Rx Lumpectomy and XRT if localized

- **LCIS** -- Risk factor for breast cancer (ductal ca)
  - Management ranges from Screening to B/L mastectomy

- **Ductal CA** -- If mass then lumpectomy or mastectomy (poss XRT)
  - Survival of mastectomy is equal to lumpectomy with radiation
  - May need chemo, and/or tamoxifen
  - Sentinel node (always), nodal dissection if palpable mass or positive (CA) in Sentinel Node

- **Inflammatory CA** -- Very bad breast cancer. Often need Chemo/Radiation, then possible mastectomy, involves dermal lymphatics, “peau d’orange”

- **BRCA1** – increased risk, +ovarian/endometrial
- **BRCA2** – increased risk, associated with male ca (ductal)
Breast

- Breast cysts get drained
  - If go away then game over………….…If recur (or bloody) need resection

- Fibroadenoma -- Round well circumscribed mass
  - Excisional biopsy if >30 years (if less, can biopsy and monitor)

- Cystosarcoma phyllodes (aka Phyllodes tumor)
  - Wide Local Excision (never need SLN)

- Intraductal papilloma -- Bloody nipple discharge
  - Resection

- Paget’s -- scaly skin lesions of nipple, have underlying DCIS or ductal CA
  - Biopsy of nipple skin
  - Tx: Resection
Trauma

- GSW to abdomen goes to the OR
- Knife to abdomen gets local exploration vs. OR

- Chest trauma and Low BP think PTX/hemothorax

- Pelvic Fracture & blood at meatus gets urethrogram

- Pain with PASSIVE MOVEMENT = Compartment syndrome!!!

- Splenic Trauma is generally non operative (if not bleeding)
  - Splenic rupture=L shoulder pain/anemia
  - Pediatric Handlebar injury hurts spleen/liver/pancreas
GOOD LUCK!!!!!!