High Yield Surgery

Shelf Exam Review

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Pre-Op Evaluation

- Contraindications to surgery
  - Absolute? Diabetic Coma, DKA
  - Poor nutrition? albumin <3, transferrin <200, weight loss <20%.
  - Severe liver failure? bili >2, PT >16, ammonia > 150 or encephalopathy
  - Smoker? stop smoking 8wks prior to surgery

If a CO2 retainer, go easy on the O2 in the post-op period. Can suppress respiratory drive.

- Goldman's Index → Tells you who is at greatest risk for surgery
  - #1 = CHF
    - What should you check? EF. If <35%, no surg.
  - #2 = MI w/in 6mo
    - What should you check? EKG → stress test → cardiac cath → revasc.
  - #3 = arrhythmia
  - #4 = Old (age >70)
  - #5 = Surgery is emergent
  - #6 = AS, poor medical condition, surg in chest/abd
    - What should you check?

Listen for murmur of AS-

Late systolic, crescendo-decrescendo murmur that radiates to carotids. ↑ with squatting, ↓ with decr preload

- Meds to stop:

  Aspirin, NSAIDs, vit E (2wks)

  Warfarin (5 days) – drop INR to <1.5 (can use vit K)

  Take ½ the morning dose of insulin, if diabetic

- If CKD on dialysis: Dialyze 24 hours pre-op
- Why do we check the BUN and Creatinine?
  - What is the worry if BUN > 100?

  There is an increased risk of post-op bleeding 2/2 **uremic platelet dysfunction**.

  - What would you expect on coag pannel?

  Normal platelets but prolonged bleeding time

Vent Settings

- Assist-control → set TV and rate but if pt takes a breath, vent gives the volume.
- Pressure support → pt rules rate but a boost of pressure is given (8-20).

  Important for weaning.
- CPAP → pt must breathe on own but + pressure given all the time.
- PEEP → pressure given at the end of cycle to keep alveoli open (5-20).

  Used in ARDS or CHF

You have a patient on a vent…

- Best test to evaluate management? ABG
- If PaO2 is low? increase FiO2
- If PaO2 is high? decrease FiO2
- If PaCO2 is low (pH is high)? → Decr rate or TV
- If PaCO2 is high (pH is low)? Incr rate or TV
- Which is more efficient? TV is more efficient to change. *Remember minute ventilation equation & dead space*

Acid Base Disorders

- Check pH → if <7.4 = **acidotic.**
- Next → Check HCO3 and pCO2:
  - If HCO2 is high and pCO2 is high? Respiratory Acidosis
  - If HCO2 is low and pCO2 is low? Metabolic Acidosis
    - Next → Check anion gap (Na – [Cl + HCO3]), normal? 8-12
    - Gap acidosis = MUDPILES
    - Non-gap acidosis = diarrhea, diuretic, RTAs (I< II, IV)
- Check pH → if >7.4 = **alkalotic.**
- Next → Check HCO3 and pCO2:
  - If HCO3 is low and pCO2 is low → Respiratory Alkalosis
  - If HCO3 is high and pCO2 is high → Metabolic Alkalosis
    - Next → Check urine [Cl]
    - If [Cl] < 20 Vomiting/NG, antactids, diuretics
    - If [Cl] > 20 Conn's, Bartter's Gittleman's.

Sodium Abnormalities

- ↓Na = Gain of water
  - Check osm, then check volume status.
  - ↑volume ↓Na: CHF, nephrotic, cirrotic
  - ↑volume ↓ Na: diuretics or vomiting + free water
  - Nl volume ↓Na: SIADH, Addisons, hypothyroidism.
  - Treatment? Fluid restriction & diruetics
  - If hypovolemic? Normal Saline
  - When to use 3% saline? Symptomatic (Seizures), < 110
  - What would you worry about? Central Pontine Myolinolysis.
- ↑Na = Loss of water
  - Treatment? Replace w/ D5W or hypotonic fluid
  - What would you worry about? cerebral edema.

Other Electrolyte Abnormalities

- Numbness, Chvostek or Troussaeu, prolonged QT interval. ↓Ca
- Bones, stones, groans, psycho. Shortened QT interval. ↑Ca
- Paralysis, ileus, ST depression, U waves. ↓K
  - Treatment? give K (kidneys!), max 40mEq/hr
- Peaked T waves, prolonged PR and QRS, sine waves. ↑K
  - Treatment? Give Ca-gluconate then insulin + glc, kayexalate, albuterol and sodium bicarb. Last resort = dialysis

Fluid and Nutrition

- Maintenance IVFs → D51/2NS + 20KCl (if peeing)
  - Up to 10kg →s 100mL/kg/day
  - Next 10 kgs → 50mL/kg/day
  - All above 20 → 20mL/kg/day
- Enteral Feeds are best → keep gut mucosa in tact and prevent bacterial translocation.
- TPN is indicated if gut can't absorb nutrients 2/2 physical or fxnal loss.
  - Risks = *acalculus cholecystitis*, hyperglycemia, liver dysfxn, *zinc deficiency*, other 'lyte probs

Burn

1st degree

2nd degree

3rd degree

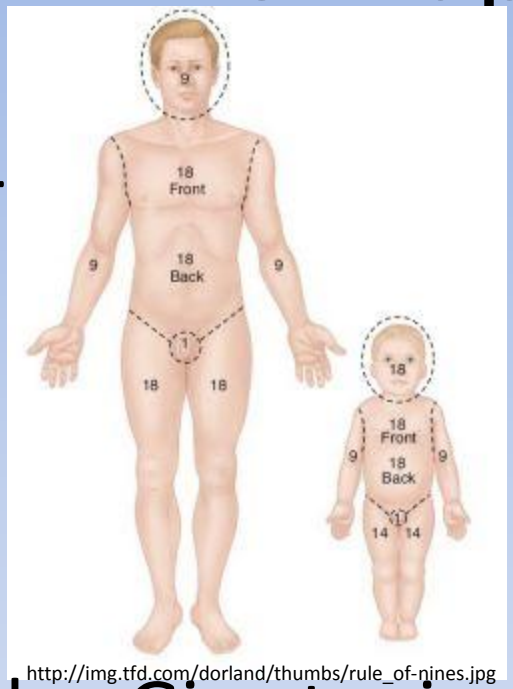
- Circumferential burns? Consider escharotomy
- Look for singed nose hairs, wheezing, soot in mouth/nose? Low threshold for intubation
- Patient w/ confusion, HA, cherry red skin?
  - Best test? Check carboxyHb (pulse ox = worthless)
  - Treatment? 100% O2 (hyperbaric if CO-Hb is ↑↑↑

Clotting & Bleeding

- Clotting-
  - In old people? Think cancer
  - Edema, HTN, & foamy pee? Nephrotic syndrome
  - In young person w/ +FH Factor V Leiden
  - What's special about ATIII def? Heparin won't work
  - Young woman w/ mult. SABs? Lupus Anticoagulant
  - Post op, ↓plts, clots HIT! (If heparin w/in 5-14 days
    - What do you treat w/? Leparudin or agatroban
- Bleeding
  - Isolated decr in plts? ITP
  - Normal plts but incr bleeding time & PTT? vWD
  - Low plts, Incr PT, PTT, BT, low fibrinogen, high Ddimer and schistocytes? DIC!! Caused by gram – sepsis, carcinomatosis, OB stuff

Burn Work up and Tx

- Rule of 9s –



http://img.tfd.com/dorland/thumbs/rule_of-nines.jpg

Give ½ over the 1st 8hrs and the rest over next 16hrs

Parkland formula-

Adults- Kg x % BSA x 3-4

Kiddos- Kg x % BSA x 2-4

Ringers lactate or normal saline

- NO PO or IV abx. Give topical.
  - Doesn't penetrate eschar and can cause leukopenia? Silver Sulfadiazine
  - Penetrates eschar but hurts like hell? Mafenide
  - Doesn't penetrate eschar and causes hypoK and HypoNa? Silver Nitrate

Other Burn Stuff

- Chemical burn, what to do? Irrigate >30min prior to ER
- Electrical Burn, best 1st step? EKG!
- If abnormal? 48 hours of telemetry (also if LOC)
- If urine dipstick + for blood but microscopic exam is negative for RBCs? Myoglobinuria → ATN
- Then what do you check? K+! (When cells break)
- If affected extremity is extremley tender, numb, white, cold with barely dopplerable pulses? Compartment syndrome!!
  - Criteria? 5 Ps or compartment pressure >30mmHg
  - Treatment? May require fasciotomy. (at bedside!)

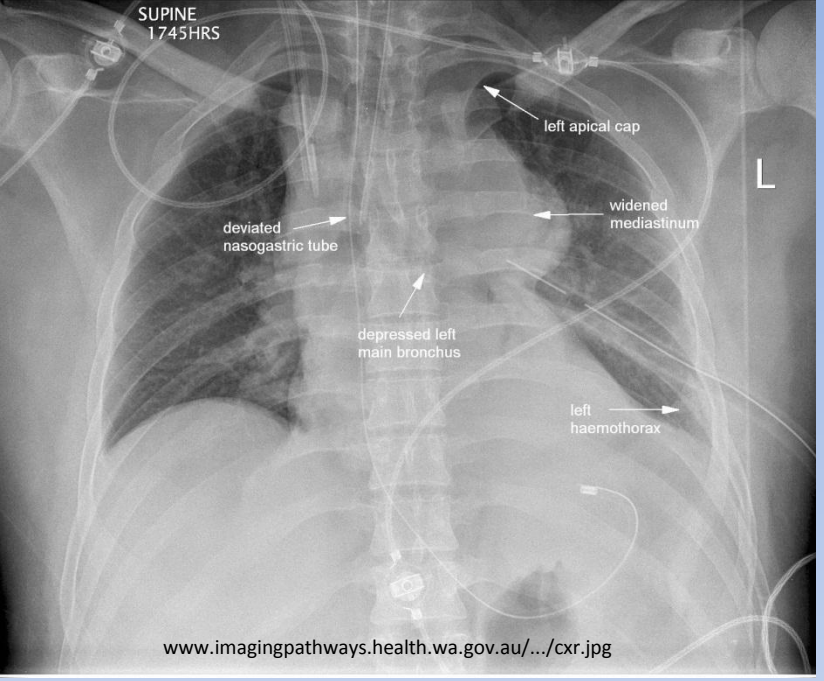
Trauma Drama

- Airway-
  - If trauma patient comes in unconscious? Intubate!
  - If GCS < 8? Intubate!
  - If guy stung by a bee, developing stridor and tripod posturing? Intubate!
  - If guy stabbed in the neck, GCS = 15, expanding mass in lateral neck? Intubate!
  - If guy stabbed in the neck, crackly sounds w/ palpating anterior neck tissues? fiberoptic broncoscope
  - If huge facial trauma, blood obscures oral and nasal airway, & GCS of 7? cricothyroidotomy

- Breathing-
  - So you intubated your patient… next best step?

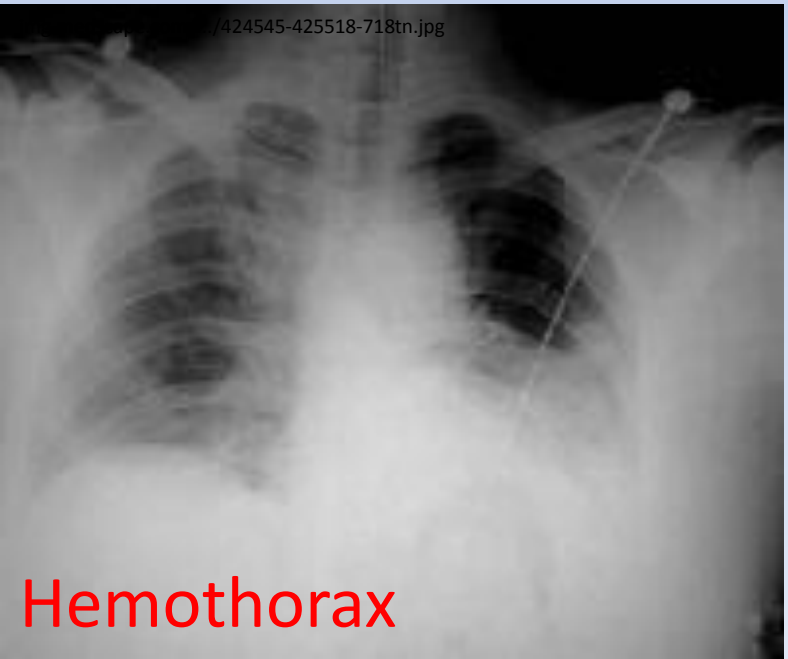
    Check bilateral breath sounds
  - If decr on the left?

    Means you intubated the right mainstem bronchus
  - What to do? Pull back your ET tube
  - Next step? Check pulse ox, keep it >90%

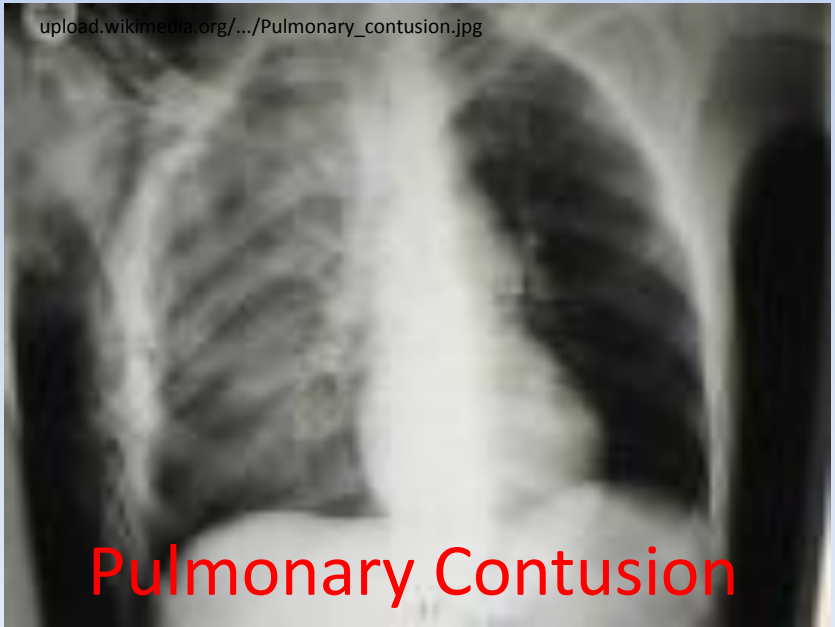


Traumatic Aortic Injury

Pneumothorax



Hemothorax



Pulmonary Contusion

Chest Trauma

- A patient has inward mvmt of the right ribcage upon inspiration.
  - Dx? Flail chest. >3 consec rib fractures
  - Tx? O2 and pain control. With what?*
- A patient has confusion, petechial rash in chest, axilla and neck and acute SOB.
  - Dx? Fat embolism
  - When to suspect it? After long bone fx (esp femur)
- A patient dies suddenly after a 3rd year medical student removes a central line.
  - Dx? Air embolism
  - When else to suspect it? Lung trauma, vent use, during heart vessel surgery.

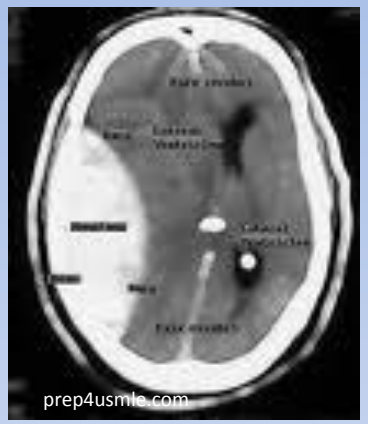
- Cardiovascular-
  - If hypotensive, tachycardic? Worry about shock
  - If flat neck veins and normal CVP? Hypovolemic/ Hemorrhagic
  - Next best step? 2 large bore periph IV- 2L NS or LR over 20min followed by blood.
  - If muffled <3 sounds, JVD, electrical alternans, pulsus paradoxus? Pericardial Tamponade
    - Confirmatory test? FAST scan
    - Treatment? Needle decompression, pericardial window or median sternotomy
  - If decr BS on one side, tracheal deviation AWAY from collapsed lung? Tension Pneumothorax
    - Next best step? Needle decompression, followed by a chest tube.
      DON'T do a CXR!!!

Shock

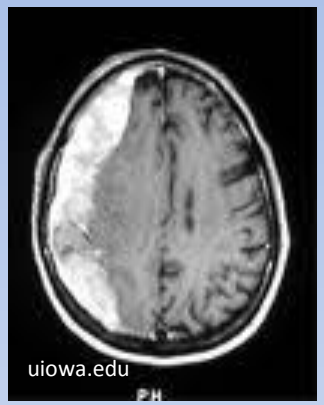
Types of Shock	Causes	Physical Exam	Swan-Ganz Catheter	Treatment
Hypovolemic	Loss of circulating blood volume (whole blood from hemorrhage or interstitial from bowel obstruction, excessive vomiting or diarrhea, polyuria or burn)	Hypotensive, tachycardic, diaphoretic, cool, clammy extremities	RAP/ PCWP↓ SVR↑ CO↓	Crystalloid resuscitation
Vasogenic	Decreased resistance w/in capacitance vessels, seen in sepsis (LPS) and anaphylaxis (histamine)	Altered mental status, hypotension warm, dry extremities (early), Late looks like hypovolemic	RAP/PCWP↓ SVR↓ CO↑ (EF↓)	Fluid resuscitation (may cause edema) and tx offending organism
Neurogenic	A form of vasogenic shock where spinal cord injury, spinal anesthesia, or adrenal insufficiency (suspect in pts on steroids encountering a stressor) causes an acute loss of sympathetic vascular tone	Hypotensive, bradycardic, warm, dry extremities, absent reflexes and flaccid tone. Adrenal insuf will have hypoNa, hyperK	RAP/PCWP↓ SVR↓ CO↑	In adrenal insuff, tx w/ dexamethasone and taper over several weeks.
Cardio-compressive	Cardiac tamponade or other processes exerting pressure on the heart so it cannot fulfill its role as a pump	Hypotensive, tachycardic, JVD, decreased heart sounds, normal breath sounds, pulsus paradoxus	U/S shows fluid in the pericardial space	Pericardio-centesis performed by inserting needle to pericardial space
Cardiogenic	Failure of the heart as a pump, as in arrhythmias or acute heart failure	SOB, clammy extremities, rales bilaterially, S3, pleural effusion, decr breath sounds, ascites, periph edema,	RAP/PCWP↑ SVR↑ CO↓	give diuretics up front, tx the HR to 60-100, then address rhythm. Next give vasopressor support if nec.

Head Trauma

- GCS → eyes 4, motor 6, verbal 5



Epidural



Acute subdural

Chronic subdural

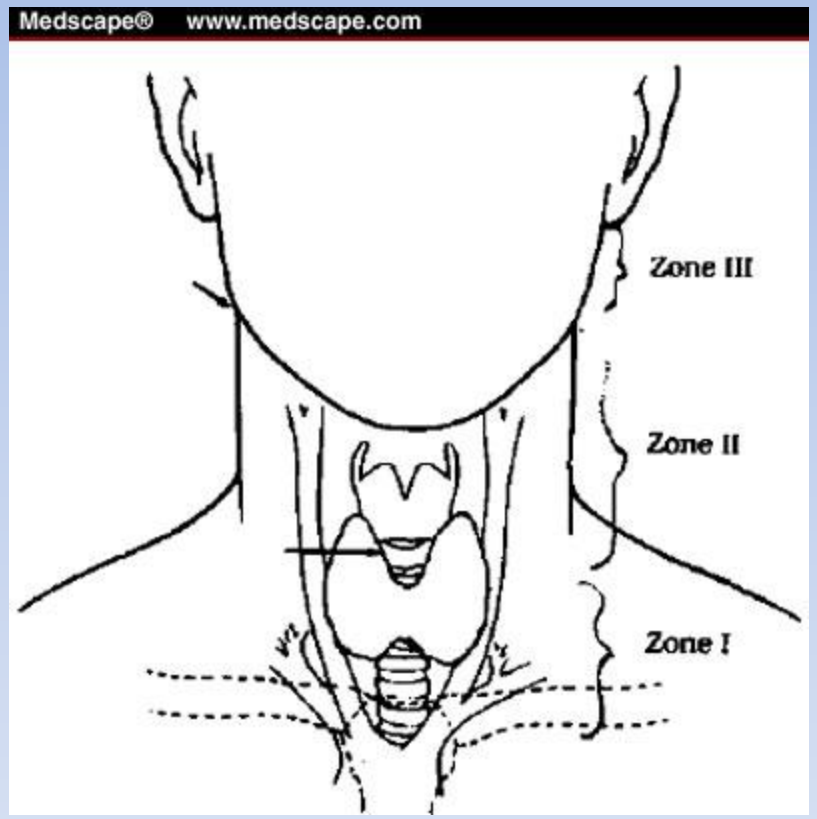
Hematoma, edema, tumor can cause increased ICP

Symptoms? Headache, vomiting, altered mental status

Treatment? Elevate HOB, hyperventillate to pCO2 28-32, give mannitol (watch renal fxn)

Surgical intervention? Ventriculostomy

Neck Trauma



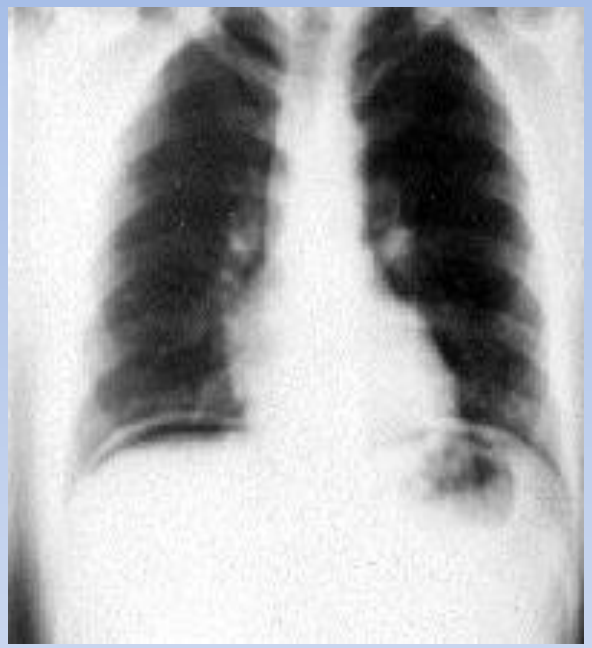
Penetrating Trauma → GSW or stab wound

Zone 3 = ↑ angle of mandible
w/u? Aortography and triple endoscopy.

Zone 2 = angle of mandible-cricoid
w/u? 2D doppler +/- exploratory surgery.

Zone 1 = ↓ cricoid
w/u? Aortography

Penetrating Abdominal Trauma



If you see this?

Do not pass go, go directly to **exploratory laparotomy**.

- If GSW to the abdomen?

  Ex-lap. (plus tetanus prophylaxis)

- If stab wound & pt is unstable, with rebound tenderness & rigidity, or w/ evisceration?

  Ex-lap. (plus tetanus prophylaxis)

- If stab wound but pt is stable?

  FAST exam. DPL if FAST is equivocal.

  Ex-lap if either are positive.

- If blunt abdominal trauma pt with hypotension/tachycardia:

  Ex-lap.

Blunt Abdominal Trauma

If unstable? Ex-lap.

If stable? Abdominal CT

- If lower rib fx plus bleeding into abdomen — Spleen or liver lac.
- If lower rib fx plus hematuria — Kidney lac.
- If Kehr sign & viscera in thorax on CXR — Diaphragm rupture.
- If handlebar sign — Pancreatic rupture.
- If stable w/ epigastric pain?
  - Best test? Abdominal CT.
  - If retroperitoneal fluid is found? Consider duodenal rupture.

Pelvic Trauma

- If hypotensive, tachycardic → FAST and DPL to r/o bleeding in abdominal cavity.
- Can bleed out into pelvis → stop bleeding by fixing fx → internal if stable, external if not.
- If blood at the urethral meatus and a high riding prostate?

Consider pelvic fracture w/ urethral or bladder injury.

- Next best test? Retrograde urethrogram (NOT FOLEY!)
- If normal? Retrograde cystogram to evaluate bladder
- What are you looking for? Check for extravasation of dye. Take 2 views to ID trigone injury.

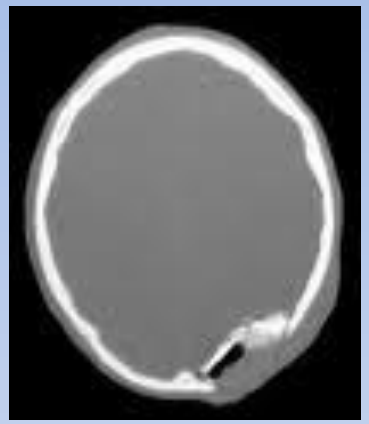
If extraperitoneal extravasation?
Bed rest + foley

If intraperitoneal extravasation?
Ex-lap and surgical repair

Ortho Trauma

- Fractures that go to the OR-
  - Depressed skull fx
  - Severely displaced or angulated fx
  - Any open fx (sticking out bone needs cleaning)
  - Femoral neck or intertrochanteric fx
- Common fractures-
  - Shoulder pain s/p seizure or electrical shock — Post. shoulder dislocation
  - Arm outwardly rotated, & numbness over deltoid. — Ant. shoulder dislocation
  - old lady FOOSH, distal radius displaced. — Colle's fracture
  - young person FOOSH, anatomic snuff box tender. — Scaphoid fracture
  - "I swear I just punched a wall…" — Metacarpal neck fracture "Boxer's fracture". May need K wire
  - Clavicle most commonly broken where? — Between middle and distal 1/3s. Need figure of 8 device

Ortho Trauma X-rays



Depressed skull fx

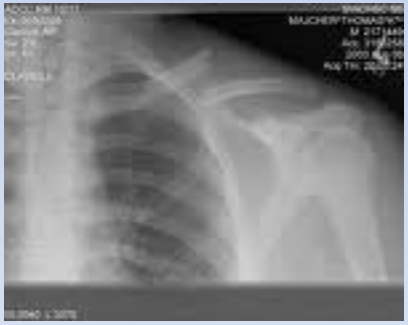
mksforum.net

Colle's fx

xraypedia.com/files/images/fxapcolles.jpg

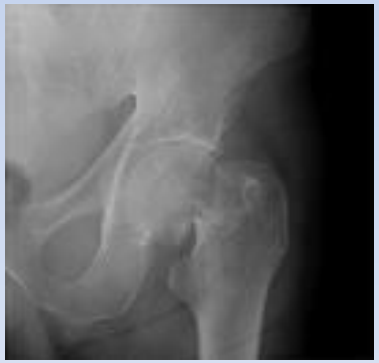
Scaphoid fx

orthoinfo.aaos.org/figures/A00012F04.jpg



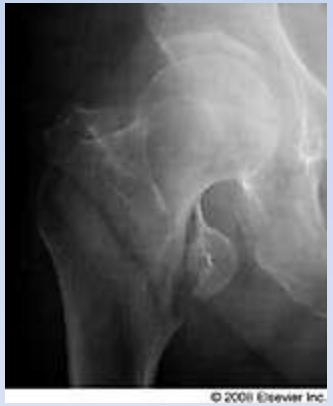
Clavicle fx

en.academic.ru



Femoral neck fx

gentili.net



Intertrochanteric fx

download.imaging.consult.com/.../gr5-midi.jpg

- Fever on POD #1-
  - Most common cause, low fever (<101) and non productive cough? Atalectasis
    - Dx? CXR- see bilateral lower lobe fluffy infiltrates
    - Tx? Mobilization and incentive spirometry.
  - High fever (to 104!!), very ill appearing. Nec Fasc
    - Pattern of spread? In subQ along Scarpa's fascia.
    - Common bugs? GABHS or clostridium perfringens
    - Tx? IV PCN, Go to OR and debride skin until it bleeds
  - High fever (>104!!) muscle rigidity. Malignant Hyperthermia
    - Caused by? Succ or Halothane
    - Genetic defect? Ryanodine receptor gene defect
    - Treatment? Dantrolene Na (blockes RYR and decr intracellular calcium.

- Fever on POD #3-5-
  - Fever, productive cough, diaphoresis

Pneumonia

    - Tx? Check sputum sample for culture, cover w/ moxi etc to cover strep pneumo in the mean time.
  - Fever, dysuria, frequency, urgency, particularly in a patient w/ a foley.

UTI

    - Next best test? UA (nitritie and LE) and culture.
    - Tx? Change foley and treat w/ wide-spec abx until culture returns.

- Fever > POD 7-
  - Pain & tenderness at IV site — Central line infection
    - Tx? Do blood cx from the line. Pull it. Abx to cover staph.
  - Pain @ incision site, edema, induration but no drainage. — Cellulits
    - Tx? Do blood cx and start antibiotics
  - Pain @ incision site, induration WITH drainage. — Simple Wound Infection
    - Tx? Open wound and repack. No abx necessary
  - Pain w/ salmon colored fluid from incision. — Dehiscence
    - Tx? Surgical emergency! Go to OR, IV abx, primary closure of fascia
  - Unexplained fever — Abdominal Abscess
    - Dx? CT w/ oral, IV and rectal contrast to find it. Diagnostic lap.
    - Tx? Drain it! Percutaneously, IR-guided, or surgically.
  - Random → thyrotoxicosis, thrombophlebitis, adrenal insufficiency, lymphangitis, sepsis.

Pressure Ulcers

- Caused by impaired blood flow → ischemia
  - Don't culture → will just get skin flora. Check CBC and blood cultures. Can mean bacteremia or osteomyelitis.
  - Can do tissue biopsy to rule out Marjolin's ulcer
  - Best prevention is turning q2hrs
  - Stage 1 = skin intact but red. Blanches w/ pressure

  - Stage 2 = blister or break in the dermis

  - Stage 3 = SubQ destruction into the muscle

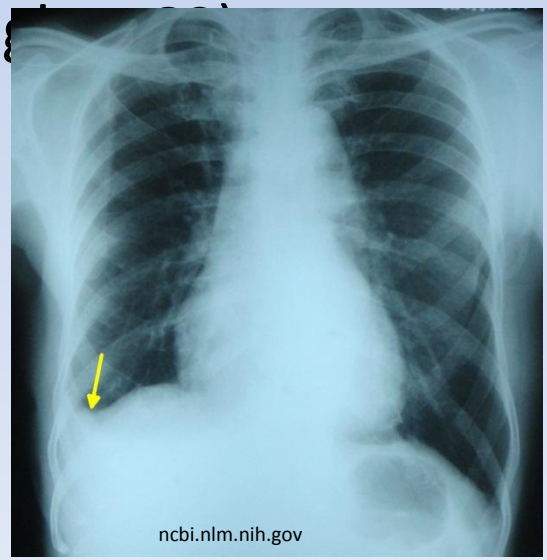
  - Stage 4 = involvement of joint or bone.

- Stage 1-2 get special mattress, barrier protection
- Stage 3-4 get flap reconstruction surgery
  - Before surgery, albumen must be >3.5 and bacterial load must be <100K

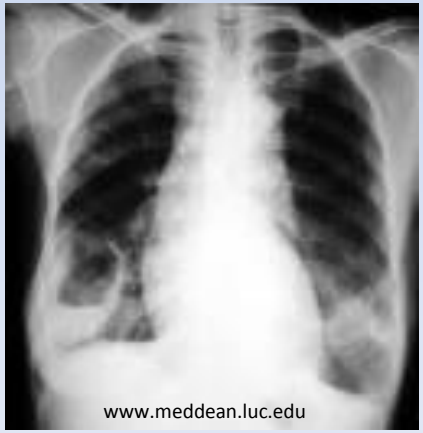
Thoracic

- Pleural Effusions → see fluid >1cm on lat decu → thoracentesis!
  - If transudative, likely CHF, nephrotic, cirrhotic
    - If low pleural glucose? Rheumatoid Arthritis
    - If high lymphocytes? Tuburculosis
    - If bloody? Malignant or Pulmonary Embolus
  - If exudative, likely parapneumonic, cancer, etc.
  - If complicated (+ gram or cx, pH < 7.2, g
    - Insert chest tube for drainage.
  - Light's Criteria → *transudative* if:

LDH < 200
LDH eff/serum < 0.6
Protein eff/serum < 0.5

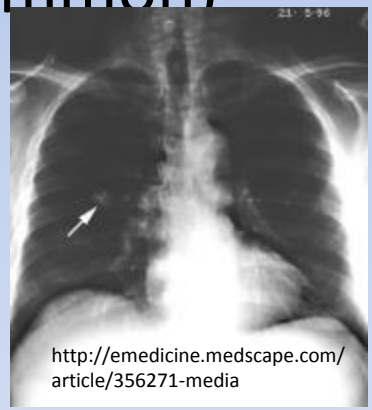


- Spontaneous Pneumothorax → subpleural bleb ruptures → lung collapse.
  - Suspect in tall, thin young men w/ sudden dyspnea (or asthma or COPD-emphysema)
  - Dx w/ CXR, Tx w/ chest tube placement
  - Indications for surgery = ipsi or contra recurrence, bilateral, incomplete lung expansion, pilot, scuba, live in remote area → VATS, pleurodesis (bleo, iodine or talc)
- Lung Abscess → usually 2/2 aspiration (drunk, elderly, enteral feeds)
  - Most often in post upper or sup lower lobes
  - Tx initially w/ **abx** → IV PCN or clinda
  - Indications for surgery = abx fail, abscess >6cm, or if empyema is present.



Work up of a Solitary Lung Nodule

- 1st step = Find an old CXR to compare!
- Characteristics of benign nodules:
  - Popcorn calcification = hamartoma (most common)
  - Concentric calcification = old granuloma
  - Pt < 40, <3cm, well circumscribed
  - Tx? CXR or CT scans q2mo to look for growth
- Characteristics of malignant nodules:
  - If pt has risk factors (smoker, old), If >3cm, if calcification
  - Tx? Remove the nodule (w/ bronc if central, open lung biopsy if peripheral.


http://emedicine.medscape.com/article/356271-media


http://emedicine.medscape.com/article/358433-media

A patient presents with weight loss, cough, dyspnea, hemoptysis, repeated pnia or lung collapse.

- MC cancer in non-smokers? **Adenocarcinoma**. Occurs in scars of old pnia
- Location and mets? Peripheral cancer. Mets to liver, bone, brain and adrenals
- Characteristics of effusion? Exudative with high hyaluronidase
- Patient with kidney stones, constipation and malaise low PTH + *central* lung mass? **Squamous cell carcinoma**. Paraneoplastic syndrome 2/2 secretion of PTH-rP. Low PO4, High Ca
- Patient with shoulder pain, ptosis, constricted pupil, and facial edema? Superior Sulcus Syndrome from **Small cell carcinoma**. Also a central cancer.
- Patient with ptosis better after 1 minute of upward gaze? Lambert Eaton Syndrome from small cell carcinoma. Ab to pre-syn Ca chan
- Old smoker presenting w/ Na = 125, moist mucus membranes, no JVD? SIADH from small cell carcinoma. Produces Euvolemic hyponatremia. Fluid restrict +/- 3% saline in <112
- CXR showing *peripheral* cavitation and CT showing distant mets? **Large Cell Carcinoma**

ARDS

- Pathophys: inflammation → impaired gas xchange, inflam mediator release, hypoxemia
- Causes:
  - Sepsis, gastric aspiration, trauma, low perfusion, pancreatitis.
- Diagnosis:
  1.) PaO2/FiO2 < 200 (<300 means acute lung injury)
  2.) Bilateral alveolar infiltrates on CXR
  3.) PCWP is <18 (means pulmonary edema is non-cardio
- Treatment: Mechanical ventilation w/ PEEP

Murmur Buzzwords

• SEM cresc/decresc, louder w/ squatting, softer w/ valsalva. + parvus et tardus	Aortic Stenosis
• SEM louder w/ valsalva, softer w/ squatting or handgrip.	HOCM
• Late systolic murmur w/ click louder w/ valsalva and handgrip, softer w/ squatting	Mitral Valve Prolapse
• Holosystolic murmur radiates to axilla w/ LAE	Mitral Regurgitation

More Murmurs

- Holosystolic murmur w/ late diastolic rumble in kiddos — VSD
- Continuous machine like murmur- — PDA
- Wide fixed and split S2- — ASD
- Rumbling diastolic murmur with an opening snap, LAE and A-fib — Mitral Stenosis
- Blowing diastolic murmur with widened pulse pressure and eponym parade. — Aortic Regurgitation

- Bad breath & snacks in the AM.

Zenker's diverticulum.
Tx w/ surgery

- True or false?

False. Only contains mucosa

- Dysphagia to liquids & solids.

Achalasia.
Tx w/ CCB, nitrates, botox, or heller myotomy
Assoc w/ Chagas dz and esophageal cancer.

Dysphagia worse w/ hot & cold liquids + chest pain that feels like MI w/ NO regurg

Diffuse esphogeal spasm.
Tx w/ CCB or nitrates

- Epigastric pain worse after eating or when laying down cough, wheeze, hoarse.

GERD. Most sensitive test is 24-hr pH monitoring. Do endoscopy if "danger signs" present. Tx w/ behav mod 1st, then antacids, H2 block, PPI.

- Indications for surgery?

bleeding, stricture, Barrett's, incompetent LES, max dose PPI w/ still sxs, or no want meds.

If hematemesis (blood occurs after vomiting, w/ subQ emphysema). Can see pleural effusion w/ ↑amylase

Boerhaave's
Esophageal Rupture

Next best test?

CXR, gastrograffin esophagram. NO edoscopy

Tx?

surgical repair if full thickness

If gross hematemesis unprovoked in a cirrhotic w/ pHTN.

Gastric Varices

If in hypovolemic shock?

do ABCs, NG lavage, medical tx w/ octreotide or SS. Balloon tamponade only if you need to stablize for transport

Tx of choice?

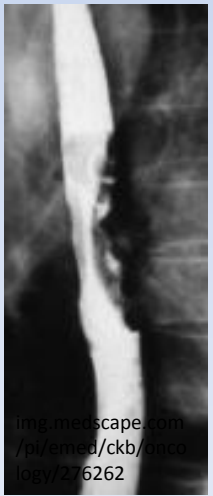
Endoscopic sclerotherapy or banding
*Don't prophylactically band asymptomatic varices. Give BB.

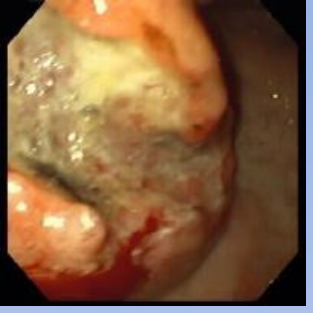
If progressive dysphagia/wgt loss.

Esophageal Carcinoma
Squamous cell in smoker/drinkers in the middle 1/3.
Adeno in ppl with long standing GERD in the distal 1/3.

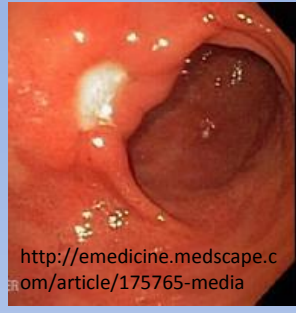
Best 1st test?

barium swallow, then endoscopy w/ bx, then staging CT.





Stomach



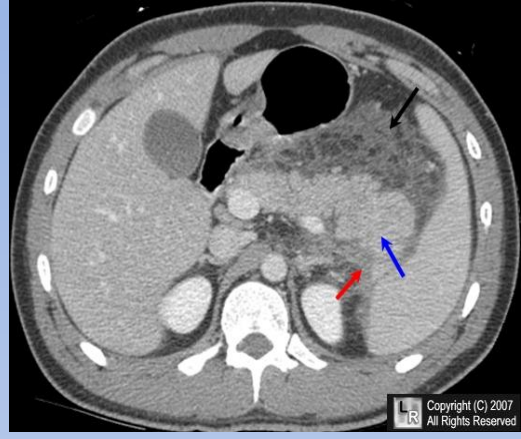
- **Acid reflux pain after eating, when laying down-** **Hiatal Hernia**
  - Type 1 = Sliding. GE jxn herniates into thorax. Worse for GERD. Tx sxs.
  - Type 2 = Paraesophageal. Abd pain, obstruction, strangulation → needs surgery.
- **MEG pain worse w/ eating. H.pylori, NSAIDs, 'roids-** **Gastric Ulcers**
  - Work up = Double-contrast barium swallow- punched out lesion w/ reg margins
  - Surgery if- EGD w/ bx can tell H. pylori, malign, benign.
    Lesion persists after 12wks of treatment.
- **Gastric Cancer**- Adeno most common. Esp in Japan
  - Krukenberg Gastric CA → ovaries
    Virchow's node L supraclav fossa
  - Lymphoma- HIV

  Blummer's Shelf Mets felt on DRE
  Sister Mary Joseph Umbilical node
  MALT-lymphoma- H. pylori
- Randoms-
  - **Mentriers** = protein losing enteropathy, enlarged rugae.
  - **Gastric Varices** = splenic vein thrombosis.
  - **Dieulafoy's** = massive hematemesis → mucosal artery erodes into stomach

Duodenum

- MEG pain better w/ eating — Duodenal Ulcers
  - 95% assoc w/ H. pylori
  - Healthy pts < 45y/o can do trial of H2 block or PPI
  - Dx? — blood, stool or breath test for H. pylori but endoscopy w/ biopsy (CLO test) is best b/c it can also exclude cancer.
  - Tx? — PPI, clarithromycin & amoxicillin for 2wks. Breath or stool test can be test of cure.
- What to suspect if MEG pain/ulcers don't resolve? — ZE Syndrome
  - Best test? — Secretin Stim Test (find inapprop high gastrin)
  - Tx? — Surgical resection of pancreatic/duodenal tumor
  - What else to look for? — Pituitary and Parathyroid problems.
- A patient has bilious vomiting and post-prandial pain. Recently lost 200lbs on "Biggest Loser". — SMA Syndrome
  - Pathophys- — 3rd part of duodenum compressed by AA and SMA
  - Tx? — by restoring weight/nutrition. Can do Roux-en-Y

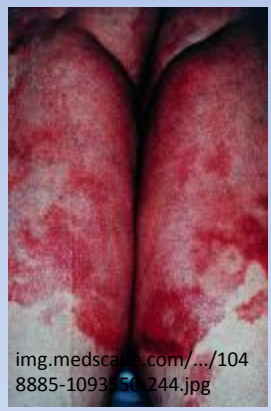
Exocrine Pancreas



- MEG pain straight through to the back. Pancreatitis
  - Most common etiologies? Gallstones & ETOH
  - Dx? Incr amylase & lipase. CT is best imaging test
  - Tx? NG suction, NPO, IV rehydration and observation
  - Bad prognostic factors- old, WBC>16K, Glc>200, LDH>350, AST>250… drop in HCT, decr calcium, acidosis, hypox
  - Complications- pseudocyst (no cells!), hemorrhage, abscess, ARDs
- Chronic Pancreatitis-
  - Chronic MEG pain, DM, malabsorption (steatorrhea)
  - Can cause splenic vein thrombosis → which leads to …? Gastric varices!
- Adenocarcinoma-
  - Usually don't have sxs until advanced. If in head of pancreas → Courvoisier's sign large, nontender GB, itching and jaundice
  - Trousseau's sign = migratory thrombophlebitis
  - Dx w/ EUS and FNA biopsy
  - Tx w/ Whipple if: no mets outside abdomen, no extension into SMA or portal vein, no liver mets, no peritoineal mets.

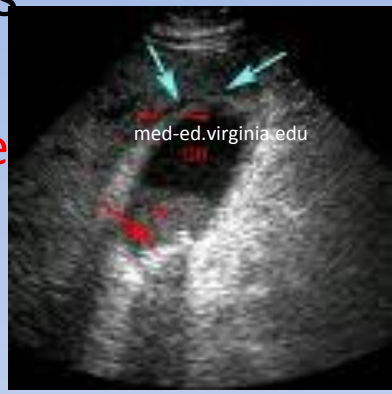
Endocrine Pancreas

- Insulinoma-
  - Whipple's triad? sxs (sweat, tremors, hunger, seizures) + BGL < 45 + sxs resolve w/ glc admin
  - Labs? insulin ↑, C-peptide ↑, pro-insulin ↑
- Glucagonoma-
  - Sxs? Hyperglycemia, diarrhea, weight-loss
  - Characteristic rash? necrolytic migratory erythema
- Somatistainoma-
  - Commonly malignant. see malabsorption, steatorrhea, ect from exocrine pancreas malfxn
- VIPoma-
  - Sxs? Watery diarrhea, hypokalemia, dehydration, flushing.
  - Looks similar to carcinoid syndrome.
  - Tx? Octreotide can help sxs



Gallbladder

Acute Cholecystitis



- RUQ pain → back, n/v, fever, worse s/p fatty foods
  - Best 1st test? U/S
  - Tx? Cholecystectomy. Perc cholecystostomy if unstable
- RUQ pain, high bili and alk-phos. Choledocolithiasis
  - Dx? U/S will show CBD stone.
  - Tx? Chole +/- ERCP to remove stone
- RUQ pain, fever, jaundice, ↓BP, AMS. Ascending Cholangitis
  - Tx? w/ fluids & broad spec abx. ERCP and stone removal.
- Choledochal cysts-
  - Type 1? Fusiform dilation of CBD → Tx w/ excision
  - Type 5? Caroli's Dz. Cysts in intrahepatic ducts → needs liver transplant
- Cholangiocarcinoma- rare.
  - Risk factors? Primary sclerosing cholangitis (UC), liver flukes and thorothrast exposure. Tx w/ surgery +/- radiation.

Liver

- Hepatitis-
  - AST = 2x ALT → Alcoholic heptatitis (reversible)
  - AST > ALT high (1000s) → Viral hepatitis
  - AST & ALT high s/p hemorrhage, surg, or sepsis → Shock liver
- Cirrhosis and Portal HTN-
  - Tx- SS and VP vasocontrict to decrease portal pressure, betablockers also decrease portal pressure.
  - *Don't need to treat esophageal varices prophyactically*, but band/burn them once they bleed once.
  - TIPS relieves portal HTN but… → worsens hepatic encephalopahty
    - Treat with: Lactulose. helps rid body of ammonia.
- Hepatocellular Carcinoma
  - RF- chronic hepB carrier > hepC. Cirrhosis for any reason, plus aflatoxin or carbon tetrachloride.
  - Dx w/ high AFP (in 70%), CT/MRI.
  - Tx: can surgically remove solitary mass, use rads or cryoablation for pallation of multiple.

More Liver

*Women on OCP → palpable abd mass or spontaneous rupture → hemorrhagic shock Hepatic Adenoma

Dx? U/S or MRI

Tx? D/c OCPs. Resect if large or pregnancy is desired

*2nd MC benign liver tumor. W>M but less likely to rupture. No tx needed. Focal Nodular Hyperplasia

*Bacterial Abscess.

Most common bugs? E. coli, bacteriodes, enterococcus.

Tx? Surgical drainage and IV abx.

RUQ pain, profouse sweating and rigors, palpable liver. Entamoeba histolytic

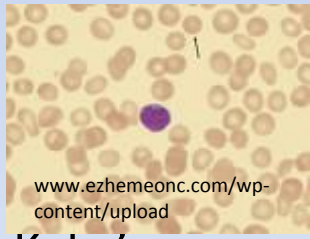
Tx? Metronidazole. DON'T drain it.

Patient from Mexico presents w/ RUQ and large liver cysts found on U/S Enchinococcus.

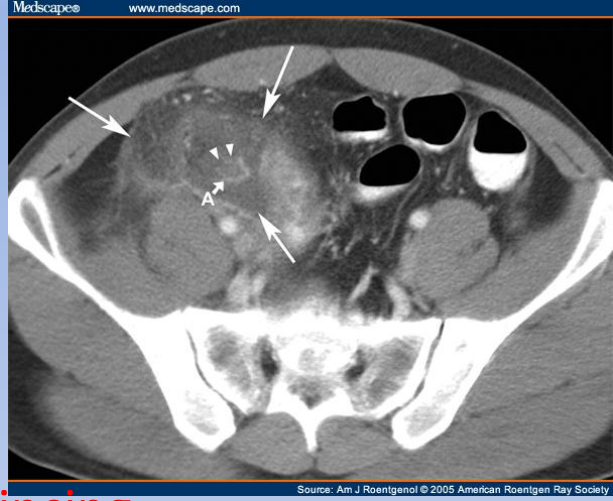
- Mode of transmission? Hydatic cyst paracyte from dog feces.
- Lab findings? eosinophilia, +Casoni skin test
- Tx? albendazole and surgery to remove ENTIRE cyst, rupture → anaphylaxis

Spleen

- Post-Splenectomy →
  - Post op thrombocytosis >1mil → give aspirin.
  - Prophylactic PCN + S. pneumo, H. flu and N. meningitidis vaccines.
- ITP-
  - Consider in isolated thrombocytopenia (bleeding gums, petechiae, nosebleeds).
  - Decr plt count, incr megakaryocytes in marrow.
  - NO splenomegaly.
  - Tx w/ steroids 1st. If relapse → splenectomy.
- Hereditary Spherocytosis-
  - See sxs of hemolytic anemia (jaundice, incr indir bili, LDH, decr haptoglobin, elevated retic count) + spherocytes on smear and +osmotic frag test. Prone to gallstones.
  - Tx w/ splenectomy (accessory spleen too).
- Traumatic Splenic Rupture-
  - Consider w/ L lower rib fx and intra abd hemorrhage. Can have Kehr's sign (irritates L diaphragm).



Appendix



- pain in umbilical area → RLQ, n/v.

  perf. Appendicitis

  – Go to surgery if: Clinical picture is convincing.

  – If perforated/abscess? drain, abx (to cover e.coli & bacteriodes), and do interval appendectomy

- Carcinoid Tumor- #1 site: Appendix!

  – Carcinoid syndrome sxs? Diarrhea, Wheezing.

  – When do they happen? When mets to liver. (1st pass metabolism

  – What else to look out for? Diarrhea, Dementia, Dermatitis

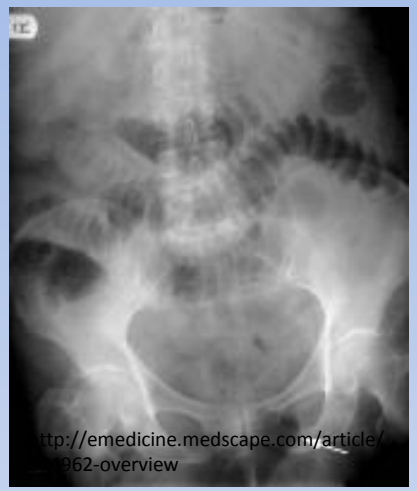
  – If >2cm, @ base of appendix, or w/ + nodes → Hemicolectomy

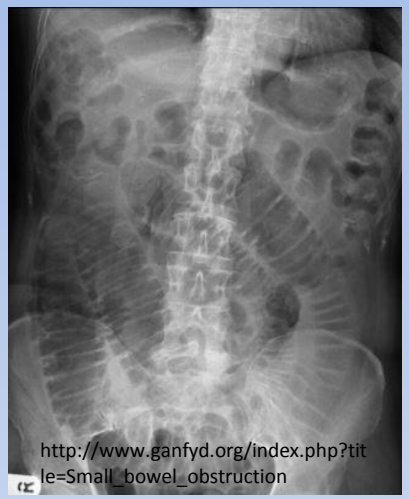
  – Otherwise → Appendectomy is good enough

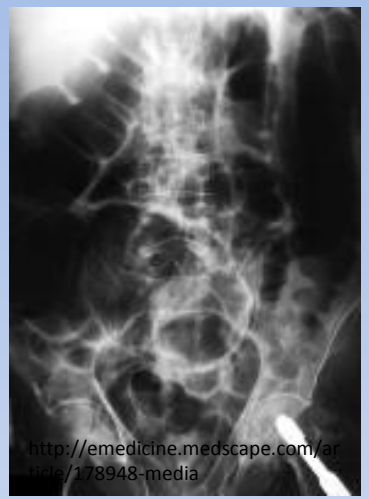
Bowel Obstruction

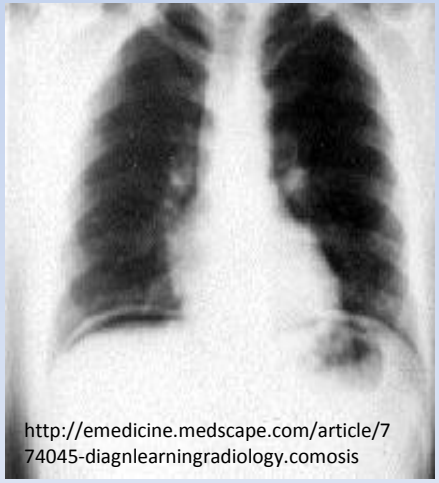
- Small Bowel Obstruction-
  - Suspect in hernia, prior GI surgery (adhesions), cancer, intussusception, IBD.
  - Sxs are *pain, constipation, obstipation, vomiting.*
  - 1st test is upright CXR to look for free air. CT can show point of obstruction.
  - Tx w/ IVF, NG tube. **Do surgery if** peritoneal signs, Incr WBC, no improvement w/in 48hrs.
- Volvulus- either cecal or sigmoid
  - Decompression from below if not strangulated. Otherwise, need surgical removal and colostomy.
- Post-Op Ileus-
  - Also consider if hypoK (make sure to replete), opiates.
  - See **dilated loops of small bowel** w/ air-fluid level.
  - Do surgery for perforation. Give lactulose/erythromycin.
- Ogilvie's syndrome-
  - See massive **colonic** distension. If >10cm, need decompression w/ NG tube and neostigmine (watch for bradycardia) or colonoscopic decompression.

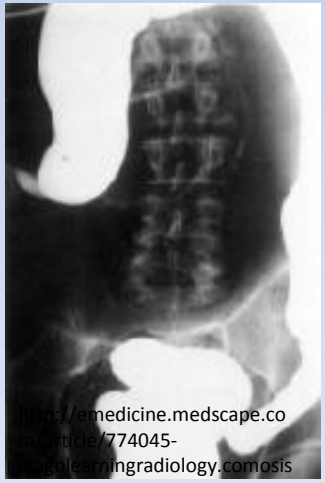
Abdominal Imaging

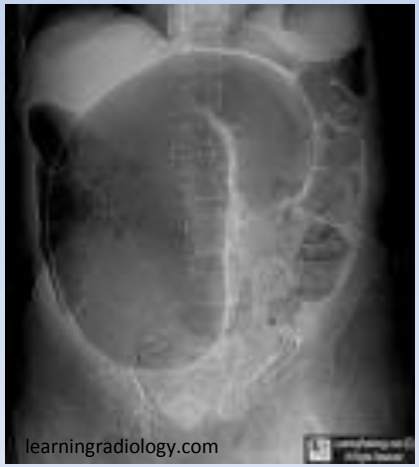












Hernias

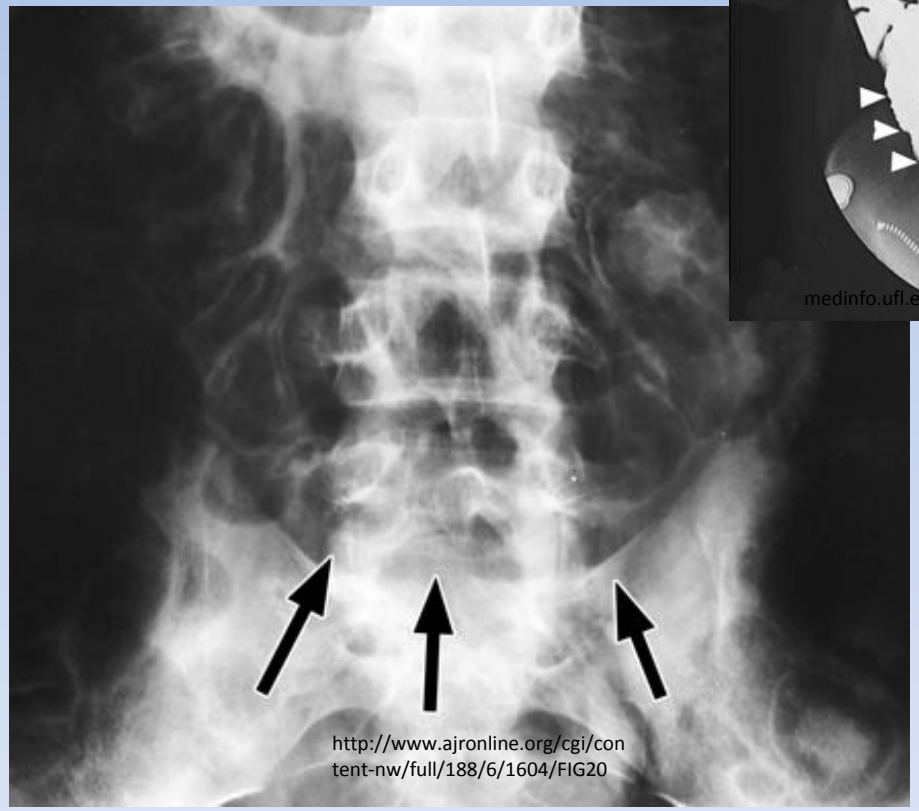
- Umbilical- in kiddos, close spontaneously by age 2. In adults: 2/2 obesity, ascites or pregnancy.
- Indirect Inguinal- MC → through inguinal ring (lat to epigastric vessles) in spermatic cord. R>L, more often congenital (patent proc vaginals)
- Direct Inguinal- → through Hasselbeck's triangle (med to epigastric vessles), more often acquired weakness.
- Femoral- more common in women.
- Tx- emergent surgical repair if incarcerated to avoid strangulation. Elective if reducible.

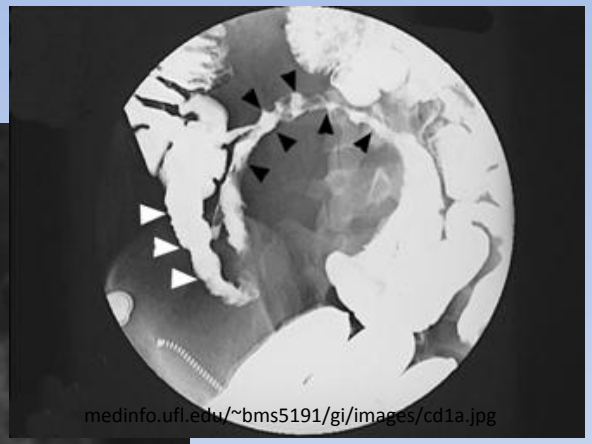
Inflammatory Bowel Disease

- Involves terminal ileum? Crohn's. Mimics appendicitis. Fe deficiency.
- Continuous involving rectum? UC. Rarely ileal backwash but never higher
- Incr risk for Primary Sclerosing Cholangitis? UC. PSC leads to higher risk of cholangioCA
- Fistulae likely? Crohn's. Give metronidazole.
- Granulomas on biopsy? Crohn's.
- Transmural inflammation? Crohn's.
- Cured by colectomy? UC.
- Smokers have lower risk? UC. Smokers have higher risk for Crohn's.
- Highest risk of colon cancer? UC. Another reason for colectomy.
- Associated w/ p-ANCA? UC.

Treatment = ASA, sulfasalzine to maintain remission. Corticosteroids to induce remission. For CD, give metranidazole for ANY ulcer or abscess. Azathioprine, 6MP and methotrexate for severe dz.

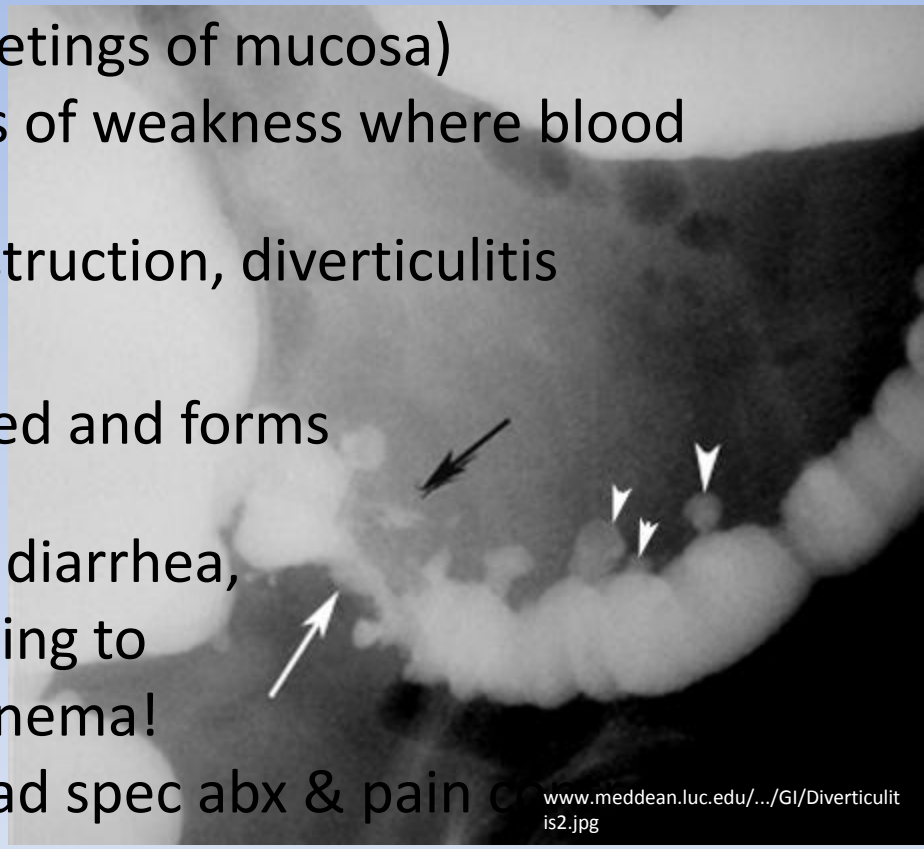
IBD Images & Complications





Diverticular Disease

- Diverticulosis-
  - False diverticulae (only outpocketings of mucosa)
  - Occur 2/2 low fiber diet in areas of weakness where blood vessels penetrate → bleed
  - Complications are bleeding, obstruction, diverticulitis
- Diverticulitis-
  - Diverticulum becomes obstructed and forms abscess/perforates
  - LLQ pain, either constipation or diarrhea,
  - Look for free air, CT is best imaging to evaluate for abscess. No Barium enema!
  - Tx w/ NPO, NG suction, IVF, broad spec abx & pain c
  - Do colonoscopy: 4-6 weeks later.
  - Surgery indicated if: multiple episodes, age <50. Elective is better than emergency (can do primary anastamosis)


www.meddean.luc.edu/.../GI/Diverticulitis2.jpg

Colorectal Cancer

- RF
  - Genetics? AFP, Lynch Syndrome, HNPCC, Gardners, Cowdens
  - Other? UC. Need colonoscopy 8-10yrs after dx
- Sxs
  - Right sided cancer = bleeding
  - Left sided cancer = obstruction
  - Rectal cancer = pain/fullness, bleeding/obstruction
- Work up DRE, transrectal ultrasound (depth of invasion), Colonoscopy! CEA to measure recurrance, CT for staging.
- Tx
  - For colon- remove affected segments & chemo if node +
  - For rectum- upper/middle 1/3 get a LAR, lower 1/3 gets an APR (remove sphincter, permanent colostomy)

AAA

- Screening = men 65-75 who have ever smoked. Do abdominal U/S.

- Sxs = pulsatile abdominal mass.
- Tx conservatively if:

  if <5cm and asymptomatic, monitor growth every 3-12mo.
- Surgery indicated if: >5cm, growing <4mm/yr
- Rupture =
  - severe sudden abdomen, flank or back, shock, tender pulsatile mass.
  - 50% die before reaching the hospital.
- Post-op complications = #1 cause of death → MI
  - Bloody diarrhea → Ischemic colitis
  - Weakness, decreased pain w/ preserved vibr, prop- → ASA syndrome
  - 1-2 yrs later if have brisk GI bleeding → Aortoenteric Fistula

Mesenteric Ischemia

- Acute Mesenteric Ischemia = surgical emerg!
  - Acute abdominal pain in a pt w/ A-fib subtherapeutic on warfarin or pt s/p high dose vasoconstrictors (shock, bypass).
  - Work up is angiography (aorta and SMA/IMA)
  - Tx is embolectomy. If thrombus, or aortomesenteric bypass.
- Chronic Mesenteric Ischemia =
  - Slow progressing stenosis (*req stenosis of 2.5 vessels* → Celiac, SMA and IMA).
  - Severe MEG pain after eating, food fear and weight loss. *"Pain out of proportion to exam".*
  - Dx w/ duplex or angiography.
  - Tx w/ aortomeseteric bypass or transaortic mesenteric endarterectomy.

Peripheral Artery Disease

- Acute arterial occlusion: 5P's → no dopplerable pulses.
  - Tx w/ immediate heparin + prepare for surgery.
  - Surgery (embolectomy or bypas) done w/in 6hrs to avoid loss.
  - Thrombolytics may be possible if: no surg in <2wks, hemorrhagic stroke.
  - Complications = compartment syndrome during reperfusion period → do fasciotomy watch for myoglobinuria.
- Claudication-
  - Pain in butt, calf thigh upon exertion.
  - Best test? Ankle-Brachial Index
  - Normal- >1
  - Claudication & Ulcers- 0.4-0.8, use medical management
  - Limb ischemia- 0.2-0.4, surgery is indicated
  - Gangrene <0.2, may require amputation

DVT and PE

- High risk after surgery (esp orthopedic)
- DVT-
  - Dx w/ Duplex U/S & also check for PE
  - Tx w/ heparin, then overlap w/ warfarin for 5 days, then continue warfarin for 3-6mo.
  - Complications- post-phlebotic syndrome = chronic valvular incompetence, cyanosis and edema
- PE-
  - Random signs = right heart strain on EKG, sinus tach, decr vascular markings on CXR, wedge infarct, ABG w/ low CO2 and O2.
  - If suspected, give heparin 1st! Then work up w/ V/Q scan, then spiral CT. Pulmonary angiography is gold standard.
  - Tx w/ heparin warfarin overlap. Use thrombolytics if severe but NOT if s/p surgery or hemorrhagic stroke. Surgical thrombectomy if life threatening. IVC filter if contraindications to chronic coagulation.

Work up of a Thyroid Nodule

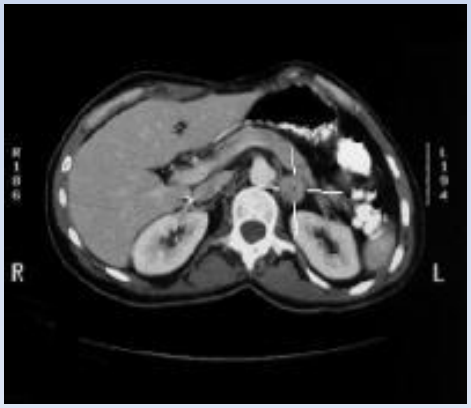
- 1st step? Check TSH
- If low? Do RAIU to find the "hot nodule". Excise or radioactive I^{131}
- If normal? FNA
- If benign? Leave it alone.
- If malignant? Surgically excise and check pathology
- If indeterminate? Re-biopsy or check RAIU
- If cold? Surgically excise and check pathology
  - Papillary MC type, spreads via lymph, psammoma bodies
  - Follicular Spreads via blood, must surgically excise whole thyroid!
  - Medullary Assoc w/ MENII (look for pheo, hyperCa). Amyloid/calci
  - Anaplastic 80% mortality in 1st year.
  - Thyroid Lymphoma Hashimoto's predisposes to it.

Work up of an Adrenal Nodule

- #1- check functional status

Diagnosis	Features	Biochemical Tests
Pheochromocytoma	High blood pressure, catechol symptoms	Urine- and plasma-free metanephrines
Primary aldosteronism	High blood pressure, low K^+, low PRA*	Plasma aldosterone-to-renin ratio
Adrenocortical carcinoma	Virilization or feminization	Urine 17-ketosteroids
Cushing or "silent" Cushing syndrome	Cushing symptoms or normal examination results	Overnight 1-mg dexamethasone test

- #2- if <5cm and non-function → observe w/ CT scans q6mo.



If >6cm or functional → surgical excision

http://emedicine.medscape.com/article/116587-treatment

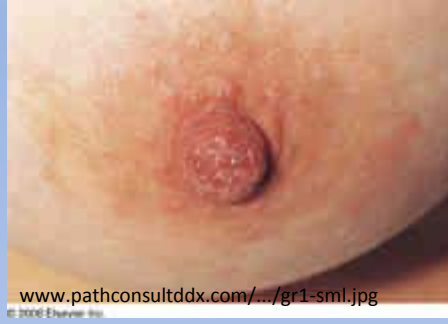
Parathyroid Disease

- Hypoparathryoidism
  - Typically comes from thyroidectomy
  - Sxs are perioral numbness, Chvortek, Trousseau
  - ↓[Ca], ↑[PO4], ↓[PTH]
- Hyperparathyroidism-
  - Usually asymptomatic ↑Ca, but can present w/ kidney stones, abdominal or psychiatric sxs
  - ↑[Ca], ↓[PO4], ↑vitD, ↑[PTH]
  - Dx w/ FNA of suspicious nodules. Can use Sestamibi scan.
  - Tx w/ surgical removal of adenoma. If hyperplasia, remove all 4 glands and implant 1 in forearm.
- MEN-
  - MEN1- pituitary adenoma, parathyroid hyperplasia, pancreatic islet cell tumor.
  - MEN2a- parathryoid hyperplasia, medullary thyroid cancer, pheochromocytoma
  - MEN2b- medullary thyroid cancer, pheochromocytoma, Marfanoid

Work up of a Breast Mass

- U/S can tell if solid or cystic. MRI is good for eval dense breast tissue, evaluating nodes and determining recurrent cancer.
  - Best imaging for the young breast
  - U/S good for determining fibroadenoma/cysto-sarcoma phyllodes.
- Aspiration of fluid if cystic, FNA for cells if solid
  - Send fluid for cytology if its bloody or recurs x2
  - Fibrocystic change → cysts are painful and change w/ menses. Fluid is typically green or straw colored.
    - Restrict caffiene, take vitamin E, wear a supportive bra
- Excisional biopsy if palpable or if fluid recurs
- Mammaographically guided multiple core biopsies

Breast Cancer

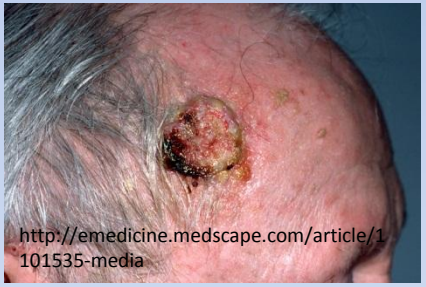


- RF: BRCA1 or 2, person hx of breast cancer, nulliparity, endo/exogenous estrogen.
- DCIS-
  - Either excision w/ clear margins or simple mastectomy if multiple lesions (no node sampling) + adjuvant RT.
- LCIS-
  - More often bilateral. Consider bilateral mastectomy only if +FH, hormone sensitive, or prior hx of breast cancer
- Infiltrating ductal/lobular carcinoma-
  - If small and away from nipple, can do lumpectomy w/ ax node sampling. Adjuvant RT. Chemo if node +. Tamoxifen or Raloxifen if ER +
  - Modified radical mastectomy w/ ax node sampling w/o adjuvant RT gives same prognosis.
- Paget's Dz-
  - Looks like eczema of the nipple. Do mammogram to find the mass.
- Inflammatory-
  - Red, hot, swollen breast. Orange peal skin. Nipple retratction.

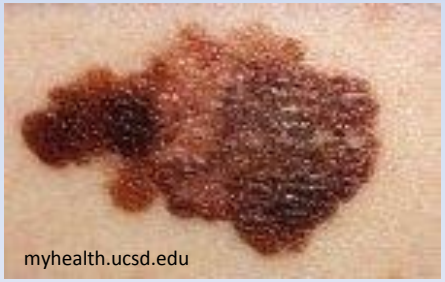
Skin Cancer


http://emedicine.medscape.com/article/276624-media

- Basal Cell Carcinoma-
  - Shave or punch bx then surgical removal (Mohs)
- Squamous Cell Carcinoma-
  - AK is precursor lesion (tx w/ 5FU or excision) or keratoacanthoma.
  - Excisional bx at edge of lesion, then wide local excision.
  - Can use rads for tough locations.


http://emedicine.medscape.com/article/1101535-media

- Melanoma-
  - Superficial spreading (best prog, most common)
  - Nodular (poor prog)
  - Acrolintiginous (palms, soles, mucous membranes in darker complected races).
  - Lentigo Maligna (head and neck, good prog)
  - Need full thickness biopsy b/c depth is #1 prog
  - Tx w/ excision-1cm margin if <1mm thick, 2cm margin if 1-4mm thick, 3cm margin if >4mm
  - High dose IFN or IL2 may help

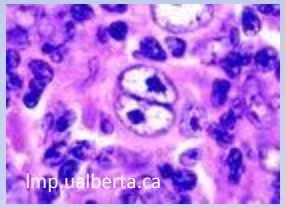

myhealth.ucsd.edu

Sarcoma

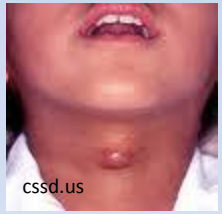
- Soft Tissue Sarcoma-
  - Painless enlarging mass. (Don't confuse w/ bruised muscle.
  - Dx w/ biopsy (NOT FNA). Excisional if <3cm otherwise incisional.
  - Tx w/ wide, local excision or ampulation + RT.
  - Spreads 1st to the lungs (hematogenously) → can do wedge resection if only met and primary is under control.
- Liposarcoma-
  - 99% DON'T come from lipoma
- Fibrosarcoma/Rhabdomyosarcoma/ Lymphangiosarcoma-
  - Hard round mass on extremity. Can occur in areas of chronic lymphedema

Work up of a Neck Mass

- 7 days = inflammatory, 7 mo = cancer, 7 yrs = congenital
  - MC is a reactive node, so #1 step is to examine teeth, tonsils, etc for inflammatory lesion
  - If you find a lesion that's still there in 2 week → FNA it!
  - If node is firm, rubbery and "B sxs" are present → excisional bx looking for Lymphoma
    - Hodgkins = lymphocyte predom is good prog factor. Reed Sternberg cells.
    - Non-Hodgkins = nodular and well-dif are good prog factor.
    - Staging CT, CXR and laparotomy for chemo and XRT treatment

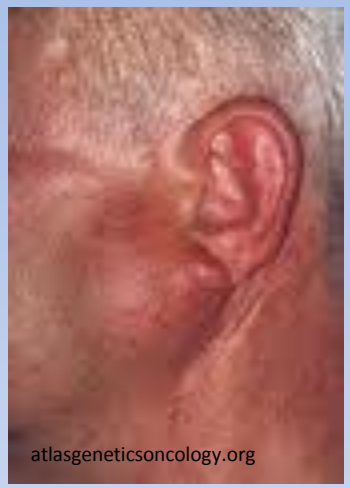


- If midline → thyroglossal duct cyst, move tongue → mass moves. Remove surgically.
- If anterior to SCM → brancial cleft cyst
- If spongy, diffuse and lateral to SCM → cystic hygroma (Turners, Down's, Klinefelters)



ENT Cancers

- Oral Cancer-
  - Most freq squamous cell. In smokers & drinkers
  - Tx w/ XRT or radical dissection (jaw/neck)
- Laryngeal Cancer-
  - Laryngeal papilloma in kiddo w/ stridor or cough
  - Squamous cell in adults.
  - Tx w/ laryngoscope laser or resection
- Pleomorphic Adenoma-
  - MC salivary glad tumor. Usually on parotid. Benign but recurs
- Warthlin's Tumor-
  - Papillary cystadenoma lymphomatosum. Benign on parotid gland.
  - Can injure facial nerve (look for palsy sxs in ? Stem)
- Mucoepidermoid Carcinoma-
  - MC malignant tumor. Arises from duct. Causes pain and CNVII palsy



Pedi-Surg

Baby is born w/ respiratory distress, scaphoid abdomen & this CXR.

Diaphragmatic hernia

- Biggest concern? Pulmonary hypoplasia
- Best treatment? If dx prenatally, plan delivery at @ place w/ ECMO. Let lungs mature 3-4 days then do surg

Baby is born w/ respiratory distress w/ excess drooling.

TE- Fistula

- Best diagnostic test? Place feeding tube, take xray, see it coiled in thorax

GI disorders

- Defect lateral (usually R) of the midline, no sac. *will see high maternal AFP
  - Assoc w/ other disorders? Not usually.
  - Complications? May be atretic or necrotic req removal. Short gut syndrome

Gastroschisis

- Defect in the midline. Covered by sac.
  - Assoc w/ other disorders? Yes

Omphalocele

- Defect in the midline. No bowel present.
  - Assoc w/ other disorders? Assoc w/ congenital hypo-thyroidism. (also big tongue)
  - Treatment?

    Repair not needed unless persists past age 2 or 3.

Umbilical Hernia

A vomiting baby

- 4wk old infant w/ non-bileous vomiting and palpable "olive"

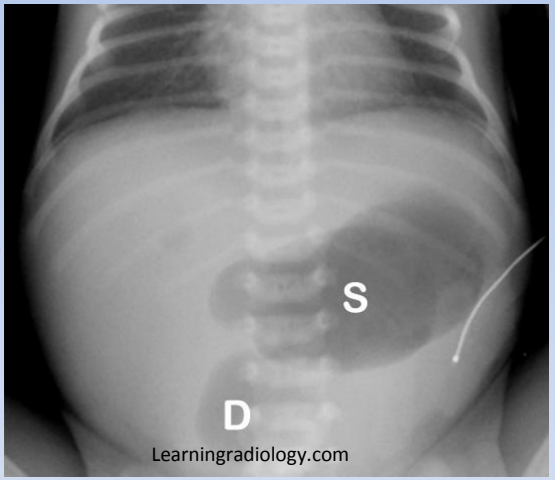
  Pyloric Stenosis

  - Metabolic complications? Hypochloremic, metabolic alkalosis
  - Tx? Immediate surg referral for myotomy

- 2wk old infant w/ bileous vomiting. The pregnancy was complicated by poly-hydramnios.

  Intestinal Atresia
  Or Annular Pancreas

  - Assoc w/? Down Syndrome (esp duodenal)



- 1 wk old baby w/ bileous vomiting, draws up his legs, has abd distension.

  Malrotation and volvulus
  *Ladd's bands can kink the duodenum

  - Pathophys? Doesn't rotate 270 ccw around SMA

Pooping Problems

- A 3 day old newborn has still not passed meconium.
  - DDX? (name 2)

Meconium ileus- consider CF if +FH
*gastrograffin enema is dx & tx
Hirschsprung's- DRE → explosion of poo.
bx showing no ganglia is gold standard

- A 5 day old former 33 weeker develops bloody diarrhea
  - What do you see on xray?
  - Treatment?
  - Risk factors?

Necrotizing Enterocolitis
Pneumocystis intestinalis (air in the wall)
NPO, TPN (if nec), antibiotics and resection of necrotic bowel
Premature gut, introduction of feeds, formula.

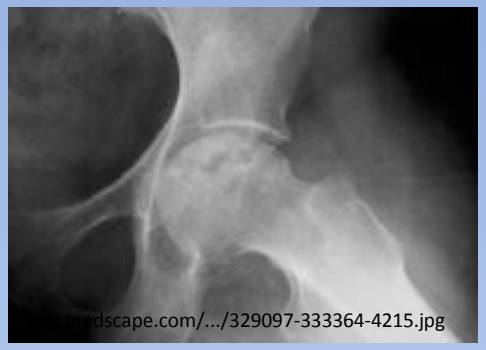
- A 2mo old baby has colicky abd pain and current jelly stool w/ a sausage shapend mass in the RUQ.

Intussusception
*Barium enema is dx and tx

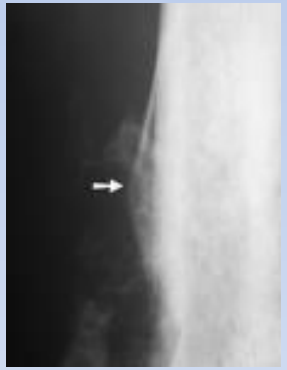
Urology

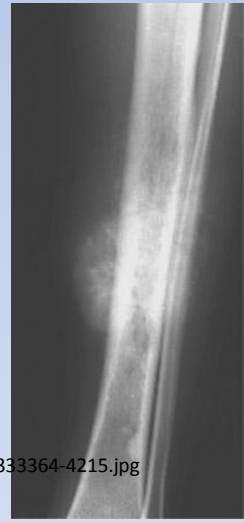
- BPH-
  - Anticholinergics meds make it worse → foley for acute urinary retention.
  - Medical Tx 1st w/ tamsulosin or finasteride
  - Surgical Tx w/ TURP (hyponatremia, retro-ejac)
- Prostate Cancer-
  - Nodules on DRE or elevated/rising PSA means → transrectal ultrasound and bx. Bone scan looks for blastic lesions.
  - Tx w/ surgery, radiation, leuprolide or flutamide.
- Kidney Stones-
  - CT is best test. If stone <5mm, hydrate and let it pass. If >5mm, do shock wave lithotripsy. Surgical removal if >2cm.
- Scrotal Mass-
  - Transilluminate, U/S, excision! (don't bx). Know hormone markers!
- Testicular Torsion-
  - Acute pain and swelling w/ high riding testis.
  - Do STAT doppler U/S → will show no flow (contrast w/ epididymitis)
  - Can surgically salvage if <6hrs. Do orchiopexy to BOTH testes.

Ortho



- Avascular Necrosis-
  - In kids → Leg-Calve-Perthe's dz in 4-5 y/o w/ a painless limp and SCFE in a 12-13 y/o w/ knee pain or sickle cell pts
  - In adults → steroid use, s/p femur fracture.
- Osteosarcoma-
  - Seen in distal femur, proximal tibia @ metaphysis, around the knee
  - Codman's triangle and Sunray appearance
- Ewing Sarcoma-
  - Seen at diaphysis of long bones, night pain, fever & elevated ESR
  - Lytic bone lesions, "onion skinning".
  - Neuroendocrine (small blue) tumor





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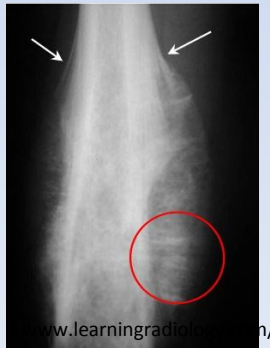

www.learningradiology.com/.../cow279lg.jpg

Transplant

- Hyperacute Rejection-
  - Vascular thrombosis w/in minutes
  - Caused by preformed antibodies
- Acute Rejection-
  - Organ dysfunction (incr GGT or Cr depending on organ) w/in 5days – 3mo. Due to T-lymphocytes.
  - Technical problems common in Liver → 1st check for biliary obstruction w/ U/S then check for thrombosis by Doppler.
  - In heart, sxs come late, so check ventricular bx periodically.
  - Tx w/ steroid bolus and antilymphocyte agent (OKT3)
- Chronic Rejection-
  - Occurs after years. Due to T-lymphocytes.
  - Can't treat it. Need re-transplantation.

Anesthesia

- Local- (lidocaine, etc)
  - Why give with epi? To prevent systemic absorption → numb tongue, seizures hypotension, bradycardia, arrhythmias
  - No epi where? Fingers, nose, penis, toes
- Spinal-Subarachnoid- (bupivacaine, etc)
  - For ppl who can't be intubated. Can't give if incr ICP or hypotensive.
- Epidural- (local + opiod)
  - If "high block" → blocks heart's SNS nerves and phrenic nerve.
- General-
  - Merperidine: Norperidine metabolite can lower seizure threshold esp in pts w/ renal failure.
  - Succinylcholine: Can cause malignant hyperthermia, hyperK (not for burn or crush victim)
  - Rocuronium, etc: Sometimes allergic rxn in asthmatics
  - Halothane, etc: Can cause malignant hyperthermia (dantroline Na), liver toxicity.