Anatomy Orals DSR 2 - group B - Charleen Schade

12) the kidneys

shape: bean shaped

L: below rib cage

F: filter blood, removing waste, producing urine

Structure external:

- 2 poles: sup + inf
- 2 borders: lat + med contains entrance to interior (renal hilum)
- 2 surfaces: ant + post

 left kidney connected to **spleen**

 right kidney connected to **liver**

Capsules/ coverings:

- innermost fibrous capsule
- middle fatty capsule (made of renal fascia)
- false capsule (made of renal fascia) ant + post

 left + right kidney diff topographies bc of liver (puts weight onto right kidney)

L right: lvl of lower border of L1 lower border of L3

L left: lvl of upper border of L1 upper border of L3

IMP L hilum: lvlv of IV disc bt L1 & L2 **transpyloric plane**

	right kidney	left kidney
superior	suprarenal gland	suprarenal gland, spleen, stomach
middle	liver, duodenum	pancreas
inferior	coils of small intestine, right colic flexure, duodenum	coils of small intestine, left colic flexure

13) ureters + urinary bladder

ureter def: tube transporting urine from kidney to bladder

3 places where lumen of ureter **constricts:**

1. pelvic-urethral junction
2. where ureter crosses pelvic brim
3. ureterovesical junction

V females: uterine arteries

V males: inf vesical arteries

Lymp. drainage: lumbar, common iliac, ext + int iliac lymph nodes

Inn: adjacent autonomic plexuses (renal, aortic, sup + inf hypogastric)

Def urinary bladder: hollow structure to pubic bones storing + emptying urine to urethra

shape: tetragonal

L: lower pelvis, sup to pubic bones, inf. to peritoneum

Structure:
4 angles: apex, neck, 2x lat
4 surfaces: base (fundus), 2x inferolat., sup.
3 muscle layers:

- outer: loose CT
- middle: Smooth + elastic
- inner: transitional epithelium

Ligaments:

- male: puboprostatic ligament
- female: pubovesical ligament
- median umbilical ligament

V: common iliac artery, sup vesicle, inf vesical (male), vaginal (female), obturator, inf. gluteal arteries

Lymph: ext + int iliac lymph nodes

14) female and male urethra

F: expels urine from urinary bladder outside the pelvis

male 4 parts:

- int. urethral sphincter
- intramural /preprostatic part (urethra leaving bladder)
- membranous part (through perineal muscle + urogenital diaphragm)
- prostatic part
- spongy part (longest part)
- ext. urethral sphincter

female parts:

- int. urethral sphincter
- intramural
- pelvic part
- perineal part
- ext. urethral sphincter

difference:

- female: urethra for urination + short
- male: urethra for urination + ejaculation

Course:
F: int. urethral orifice on bladder ext. urethral orifice in vestibule of vagina
M: int. urethral orifice on bladder ext. urethral orifice in vestibule of tip of penis (+ also exit for semen)

Inn:
F: vesical plexus + pudendal nerve

- visceral afferent: pelvic splanchnic
- somatic afferents: pudendal nerve

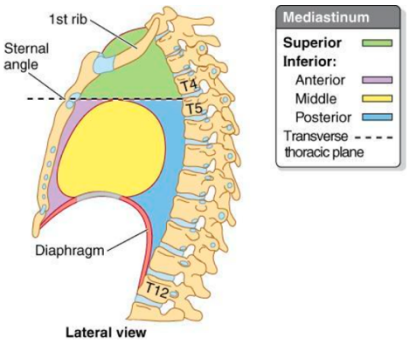
M: prostatic plexus (mixed sympathetic, parasympathetic, visceral afferent fibers)

V F: int. pudendal + vaginal + L: sacral + int iliac, inguinal
V M: middle rectal + prostatic + int. pudendal + L: int + ext iliac lymph nodes

Medical procedure of catheter (3 narrow + 3 dilations): IMP
1 **narrow**: ext urethral opening on top of penis

2. **dilation**: navicular fossa
3. **dilation**: spongy part
4. **narrow:** peritoneal muscle (horizontal becomes vertical)
5. **dilation**: prostatic part
6. **narrow:** transitional part

15) mediastinum - its subdivision + contents



def: system of anatomical structures located in middle part of thoracic cavity

4 parts:

- superior
- inf ant
- inf middle
- inf pos

Borders:

sup: thoracic inlet
inf: inf mediastinum
ant: manubrium of sternum
post: vertebral bodies T1-4
lat: pleurae of lungs

 horizontal plane (going to sternal angle) separates sup mediastinum from inf mediastinum

Sup mediastinum:

- thymus
- trachea
- esophagus
- thoracic duct
- sup vena cava
- arch of aorta
- phrenic nerves

inf middle:

- heart
- pericardium
- main bronchi
- roots of great vessels

inf ant:

- lymph nodes
- fat + CT
- part of thymus

inf post:

- thoracic duct
- esophagus
- thoracic aorta
- azygous vein
- vagus nerve + splanchnic nerves
- cisterna chyli

16) the lungs (ext + int anatomy)

shape: conical
3 borders: **post**: VC + **ant**: sharp border + **inf**
3 surfaces: costal + diaphragmatic + mediastinal

Costal surface: (most important: fissures)

- left and right oblique fissures
- right horizontal fissure
  □ separate lung into lobes

Lobes:

right lung: 3
sup + middle + inf

left lung: 2
sup + inf

Diaphragmatic surface:
□ lung is resting onto convex area of diaphragm

Mediastinal surface:
□ includes hilum with all passing vessels + structures:
□ bronchi, pulmonary A+V, bronchial A+V; lymphatic vessels, nerves of pulmonary plexus

Right lung hilum:

- uppermost + post: main bronchus, branches of pulmonary artery
- ant + inf: pulmonary veins
- cardiac impression (not deep)

Left lung hilum:

- uppermost: artery □ then bronchus
- below: veins (ABV) (artery, bronchus vein)
- deep notch, cardiac notch, deep cardiac impression

17) pleural cavity + its recesses

pleura (serous membrane) divided into **visceral + parietal pleura**
pleural cavity is thin capillary space loc bt visceral + parietal plane
visceral pleura: attached to surface of lungs
parietal pleura: covers inner surface of thoracic cavity
borders:

- sup: root of neck
- inf: diaphragm
- med: mediastinum
- lat: thoracic wall

3 recesses:

- **costomediastinal:** bt costal + mediastinal pleura
- **phrenicomediastinal:** bt diaphragm + mediastinum
- **costodiaphragmatic:** bt costal + diaphragmatic pleura

18) trachea and bronchial tree

 continuation of respiratory tract + larynx
 divides into 2 main bronchi
 only present in sup mediastinum

2 parts: **cervical + thoracic**

Characteristics:
 asymmetry bt right + left bronchus
right bronchus: broad, vertically, simple continuation of traches
left bronchus: long, narrow, horizontally
F: infections, descending along respiratory tract it will invade right bronchus more intensely

Structure:

- tracheal cartilages/ tracheal rings shaped like horse shoe
- post wall of trachea = membrane

more needed…

19) Oesophagus:

- fibromuscular tube
- part of alimentary tract
- begins: continuation of pharynx
- ends: inside of stomach

3 parts: cervical + thoracical + abdominal

3 narrower sides: IMPORTANT

- pharyngoesophageal junction
- diaphragm
- boundary bt thoracic + abdominal part

(more info)

20) peritoneum + peritoneal cavity

 serous membrane lining viscera + abdominal cavity wall

3 parts:

- **parietal peritoneum:** lines abdominopelvic wall
- **visceral peritoneum:** lines viscera (organs)
- **peritoneal cavity:** potential space bt parietal + visceral peritoneum (filled with lubricating fluid)
  - **lesser sac:** behind stomach + liver
  - **greater sac**: part of peritoneal cavity from diaphragm to pelvic cavity
  - **supracolic compartment**: above transverse mesocolon
  - **infracolic compartment**: below transverse mesocolon

 communicate via epiploic (omental) foramen

Formations:

- **mesentery:** double layer of visceral peritoneum (suspends organ from abdominal wall)
- **omenta:** sheets visceral peritoneum extend from stomach + proximal duodenum to neighboring organs

 lesser omentum: extends sup from lesser curvature of stomach to prox duodenum to liver **DOUBLE LAYERED**

 greater omentum: hangs like curtain from greater curvature of stomach + prox duodenum folds back up to attach sup to ant surface of transverse colon **QUADRUPLE LAYERED**

- peritoneal ligaments:
  □ double fold of peritoneum, connects viscera together to abdominal wall
  eg.: hipatodeodinal, gastrophrenic

Peritoneal Relations:

1. **Intraperitoneal organs:** completely wrapped around by peritoneum (liver, spleen, stomach)
2. **Retroperitoneal organs**: found in retroperitoneal space with only ant wall covered by parietal peritoneum

 Primary: organs developed + remain outside of parietal peritoneum
eg: oesophagus, rectum, kidneys

 Secondary: organs develop inside peritoneum move beneath it
eg: pancreas, distal duodenum, ascending + descending colons

Inn:

Parietal peritoneum: sensitive to pain, pressure, temperature, touch

- lower 6 thoracic nerves T7-T12
- first lumbar L1
- phrenic nerve + obturator nerve
-

Visceral peritoneum: sensitive to stretch + tearing

- autonomic afferent nerves

21) Heart topography (sceleto-; holo-; syntopy)

Holotopy:

 inside pericardium in inf middle mediastinum

 2/3 of heart is left of midline body of body

Scelentotopy: position of heart in relation to bones of thorax

post: thoracic vertebrae
lat: ribs
ant: sternum
base: lvl of 2nd rib

apex: lvl of 5th intercostal space

Syntopy: position of heart in relation to other organs

ant: sternum
post: esophagus
lat: lungs
sup: greater vessels
inf: diaphragm

22) Stomach + duodenum

1. stomach: intraperitoneal digestive organ
L:

- supramesocolic part of peritoneal cavity
- under left dome of diaphragm
- bt esophagus + duodenum

Parts: cardiac + fundus + body + pyloric
Curvatures: lesser curvature + greater curvature
Neuro V:

- parasympathetic: **vagus**
- sympathetic: **celiac plexus**
- A: celiac trunk
- drained: hepatic portal vein

Layers: !!!

- mucosa
- submucosa
- muscularis externa
- serosa

2. Duodenum:

 first part of small intestine
 has intra- + retroperitoneal parts
L: bt stomach + jejunum at lvl L1-L3

Parts:
sup: ascends from pylorus (connected to liver by hepatoduodenal ligament)
descending: curves inf around pancreas (marked by major duodenal papilla)
horizontal: lies inf to pancreas + crosses IVC + aorta
ascending: ascends + curves to join jejunum by duodejujenal flexure

V:
- celiac plexus + vagus nerve
- A: celiac trunk
- drained: pancreaticoduodenal veins

23) Small and large intestine:

1. Small intestine
Def: tube that connects stomach with large intestine (cecum)
 longest part of digestive tract
F: further digest food, absorb nutrients + water

3 parts: duodenum, jejunum, ileum
 all covered from greater omentum + mesentery connects it to abdominal wall + fixates it
Inn:
- sympathetic: thoracic splanchnic nerve
- parasympathetic: vagus nerve

2. Large intestine:
def: food waste is turned into poop, stored + excreted
 long tube + continuation of small intestine
incl: colon, rectum, anus
divided into:
- cecum
- ascending colon (right colic flexure)
- transverse colon (left colic flexure)

- descending colon
- sigmoid colon

Inn: aortic, celiac, sup + in mesenteric, hypogastric, nervous plexus

Layers:
- mucosa
- submucosa
- muscular layer
- serosa

24) Pancreas

def: accessory digestive gland + endocrine gland
L: in abdomen behind stomach, bt duodenum + spleen
 exocrine + endocrine function

4 parts: head + neck + body + tail

head: embraced by duodenum + has uncinate process
neck: short, overlies sup mesenteric vessels + origin of hepatic portal vein
body: continues from neck to left SMA + SMV; ant to splenic vein
tail: relates with hilum of spleen + left colic flexure

V:
- splenic artery
- pancreatic veins
- pancreaticosplenic nodes, pyloric lymph

Inn: paratympanic + sympathetic fibers of vagus nerve + abdominopelvic splanchnic nerves

25) spleen

 largest organ of lymphatic system + oval shaped
L: left upper quadrant left hypochondriac region

Borders:
ant: stomach
post: diaphragm, left lung, rib 9-11
inf: left colic flexure
med: left kidney + tail of pancreas

Structure: 2 surfaces

- **visceral surface**: colic, gastric, renal part
- **diaphragmatic surface**

F:

- immune surveillance
- proliferation + maturation of lymphocytes
- degradation of damaged erythrocytes

V:

- splenic artery/ vein
- lymph: celiac node

Inn: celiac plexus

26) Liver (structure, vascularization)

 largest gland with exo- endocrine function
F: filters blood + breaks down harmful substances
L: supramesocolic part of peritoneal cavity, in right hypochondrium, lies against diaphragm
shape: conical + 1,500g

Surfaces: (external)

- **diaphragmatic:** anterosup surface of liver (beneath diaphragmatic curvature)
- **visceral:** posteroinf surface, lies in contact with right kidney, right adrenal gland, gallbladder, transverse colon

4 lobes: right + left + quadrate + caudate
7 segments

Vasculature: public + private systems IMPORTANT
public: hepatic portal vein drains spleen + intestine of blood + nutrients transports them back to liver for its function
private: proper hepatic artery: livers private supply to itself

Ligaments: !!!

- falciform ligament: divides liver into R+L, attaches to diphragm + ant abdominal wall

- round ligament: consist of umbilical vein
- coronary ligament: attaches sup surface of liver to inf surface of diaphragm
- venosum
- triangular
- lesser omentum: consists of hepatoesophageal, hepatogastric, hepatoduodenal

V: R+L hepatic artery proper; hepatic veins
Inn: hepatic plexus + cervical plexus

27) gallbladder + biliary ducts

L: on visceral surface of liver
Shape: pear
F: collects + stores bile transports it to duodenum
Structure: covered by visceral peritoneum, except for part of ant wall (has fundus, body infundibulum, neck)

2 types of bile ducts: **extra- + intrahepatic ducts**
V: cystic artery/ vein
Inn:

- parasympathetic: vagus nerve
- sympathetic: thoracic splanchnic??
- viscerosensory: right phrenic

Border:
ant + sup: inf border of liver + ant abdominal wall
post: transverse colon + prox duodenum
inf: biliary tree + res of duodenum

28) pericardial sac

L: post t body of sternum + 2nd-6th costal cartilages at lvl T5-T8
F: protects heart against sudden overfilling

 influenced by movements of heart + great vessels, sternum, diaphragm
 fused with tunica adventitia of great vessels (entering + leaving heart)
 attached to post surface of sternum by sternopericardial ligaments
 fused with central tendon of diaphragm

 tough external fibrous layer = **fibrous pericardium**

29) Innervation + conducting system of heart

 independently working, impulse producing system, composed of highly specialized cardiac muscles
 separated from cardiac muscle itseld
 sends signal to tell diff part of heart ot relax/contract
 controls blood flow through heart + body

composed: **nodes + fascicles**

1. sinoatrial node (uppermost + most IMP one) 72 cycles per min
2. atrioventricular node (50c/m)
3. atrioventricular bundle
4. bundle branches
5. purkinje fibers

1. sinoatrial node: highest frequency determines pace of heart pumping
L: base of interatrial septum, close to tricuspid valve

2. atrioventricular node: provides impulses to muscles of atrium
L: within interatrial septum

 atrioventricular node elongates into **atrioventricular bundle (**branches into R+L, then many branches) end in **purkinje fibers** which can stimulate cardiac muscle to contract

Time for 1 cycle completed: **0,08sec**

Inn:
autonomic: can influence frequency of heart rate
sympathetic: increases rate + force of contraction
parasympathetic: slows heart rate

30) hearts external anatomy

shape: conical
 base projected sup; apex projected inf
 normal heart size: aprox size clenching of fist of individual

4 borders:

- sup
- inf
- left
- right

4 surfaces:

- **2x pulmonary surface** (2 lat, projected to lung)
- **sternocostal surface** (ant)
- **diaphragmatic surface** (post)

 ext surface covered by serous membrane = **epicardium**

Grooves/Sulcus:
1) **coronary sulcus:**

- main groove
- separates atria from ventricles
- only visibl on diaphragmatic surface

 ant sternocostal surface sulcus non-existed (sulcus isn't complete circle)

2) **interventricular grooves:**

- from coronary sulcus towards apex
- showing position of interventricular septum
- on inf border both grooves meet

 vessels of heart go along grooves

2 types of vessels: V + A joined with surface of fatty tissue (vessels stay in place)

 only visible part of atria on ext structure auricles
vessels related with function of heart: **corona cordis**

- aorta (leaving ventricle)
- pulmonary trunk (leaving ventricle)
- sup caval vein (right) + inf caval vein
- branches of pulmonary vein (post, sup, inf)

31) Valves of heart

 papillary muscles + chorda tendinea control positions of atrioventricular valves/casps

heart valves:

- **tricuspid:** bt right atrium + right ventricle
- **pulmonary:** bt right ventricle + pulmonary artery
- **mitral:** bt left atrium + left ventricle
- **aortic:** bt left ventricle + aorta

Chorda tendinea: exist only in AV, not in semilunar valves

as heart muscle contracts/relaxes valves open/shut letting blood flow into ventricles + atria at alternate times

 after left ventricle contracts, aortic valve closes + mitral valve opens to allow blood to flow from left atrium into left ventricle
 as left atrium contracts more blood flows into left ventricle
 when left ventricle contracts mitral valve closes + aortic valve opens, so blood flows into aorta