General Surgery Anatomy Course
May 2019

Course will meet on Wednesdays during May in Fee Hall in East Lansing from 12:00-5:00

May 8   12:00-1:00   Abdomen Lecture   1:15-5:00 dissection   Dr. Mary Bee
May 15  12:00-1:00   Chest Lecture   1:15-5:00 dissection   J. Christopher Reed, PhD
May 22  12:00-1:00   Vascular Lecture   1:15-5:00 dissection   Kerent Pihl, DO
May 29  12:00-1:00   Surgical Considerations   1:15-5:00 dissection   Karlin Sevensma, DO

Course Textbooks:
Grant’s Dissector
Netter Atlas of Human Anatomy

Goals: Following this course, the learner should be able to:

1) Describe the listed anatomical structures relating to the practice of general surgery procedures, including vascular access (see lab list)

2) Describe the relationships of anatomical structures within the abdomen and chest as they are pertinent to surgical dissection and procedures

   Relationships
   Pleura around the hilum, attachments of the lung within the chest
   Contents of the mediastinum
   Attachments of the liver to the diaphragm
   Diaphragmatic crura and penetrating structures
   Vena cava to the liver and diaphragm
   Clavicle, first rib, muscles and vasculature
   Levels of axillary lymph nodes and the critical structures to identify during axillary dissection
   Greater and lesser sac
   Foramen of Winslow to surrounding structures
   Ligament of Treitz to surrounding structures
   Celiac plexus, SMA and IMA and their courses
   Review Pringle maneuver, Kocher maneuver
   Relationships of structures within the inguinal and femoral canals
   Access to pancreas and the structures which surround the pancreas, spleen
Retroperitoneal dissection

3) Describe the anatomical structures of the retroperitoneum and their relationships to intraperitoneal structures

4) Describe the embryological development of the alimentary tract and name common malformations

5) Draw out the vascular supply and drainage of the abdominal viscera
Lab List

Abdomen

**Abdominal Wall**
- Rectus abdominis
- External abdominal oblique
- Internal abdominal oblique
- Transversus abdominis
- Parietal peritoneum
- Transversalis fascia
- Rectus sheath
- Linea alba
- Arcuate line

**Diaphragm**
- Left and right crura
- Median arcuate ligament
- Medial arcuate ligaments
- Central tendon
- Esophageal hiatus
- Caval foramen
- Aortic hiatus
- Right and left inferior phrenic arteries
- Phrenic nerves
- Thoracic splanchnic nerves

**Gastrointestinal tract:**

**Stomach**
- Cardia
- Fundus
- Body
- Pylorus
- Lesser Sac
- Greater Sac
Duodenum
- Superior (1st portion)
- Descending (2nd portion)
- Inferior/Horizontal (3rd portion)
- Ascending (4th portion)
- Major duodenal papilla
- Suspensory muscle (ligament of Treitz)

Jejunum

Ileum (vascular arcades)
- Dorsal fat pad (of Treves)

Appendix
- Mesoappendix
- Appendiceal artery

Colon
- Cecum, right, transverse, descending, sigmoid, rectum
- Haustra
- Taenia coli
- Epiploic appendages

Vessels to colon
- Ileocolic artery
- Right colic artery
- Middle colic artery
- Left colic artery
- Sigmoidal artery
- Marginal artery (of Drummond) and variant

Spleen
- Hilum
- Short gastric arteries
- Splenic artery
- Peritoneal attachments
Pancreas
Tail
Body
Head
Uncinate process
Major and minor ducts
Superior and inferior pancreaticoduodenal arteries

Kidney
Renal capsule
Renal cortex
Pelvis
Ureter
Renal arteries
Renal veins
Gonadal vessels

Liver
Right lobe - anatomical & functional
Left lobe - anatomical & functional
Quadrate lobe
Caudate lobe
Liver segments

Porta hepatis
Hepatic veins

Falciform ligament
Round ligament (*ligamentum teres hepatica*)
Coronary ligament of liver
Right and left triangular ligaments
Bare area

Common bile duct
Common hepatic duct
Right and left hepatic ducts
Cystic duct
Arteries

Abdominal aorta
  Celiac trunk
    Splenic
    Left gastric
    Left gastroepiploic
    Common hepatic
    Right gastric
    Gastroduodenal
    Right gastroepiploic
    Proper hepatic
      Right hepatic
      Left hepatic
      Cystic
  Superior mesenteric
    Arcades
    Vasa recta (straight aa)
    Ileocolic
    Right colic
    Middle colic
  Inferior mesenteric
    Left colic
    Sigmoidal
    Superior rectal
  Renal
  Suprarenal

Lumbar aa
  Common iliac arteries
    Internal iliac arteries
    External iliac arteries
      Deep circumflex iliac artery
Veins
Hepatic portal
  Splenic
  Superior mesenteric
  Inferior mesenteric
Renal
  Left gonadal (*drains into left renal*)
Suprarenal
Inferior vena cava
  Right gonadal (*drains into right renal*)
Common iliac
  External iliac
  Internal iliac

Peritoneal Structures:
Greater omentum
Lesser omentum
  Hepatogastric ligament
  Hepatoduodenal ligament
Epiploic foramen
Transverse mesocolon
Mesojejunum
Mesoileum
Sigmoid mesocolon

Paracolic gutters (*R & L*)
Infracolic spaces (*R & L*)
Hepatorenal recess of subhepatic space

Pelvis

Muscles
Iliacus
Psoas major
Obturator internus
Piriformis
Greater sciatic foramen
Lesser sciatic foramen
Obturator foramen

Inguinal ligament
   Lateral crus
   Medial crus
Superficial inguinal ring
Deep inguinal ring
Spermatic cord/round ligament
Cremaster muscle
Conjoined tendon (falx inguinalis)

Pelvic diaphragm: levator ani, coccygeus
External and internal anal sphincters

Bladder
   Trigone
   Detrusor muscle
   Internal urethral orifice
   Internal urethral sphincter

Ureters
Retropubic space
Rectum

Nerves
Obturator
Femoral
Lateral cutaneous nerve of thigh
Genitofemoral
   Genital branch
   Femoral branch
Pudendal

Sacral ventral rami
Lumbosacral trunk

Arteries/Veins:
Common iliac
   External iliac
   Deep circumflex iliac
Internal iliac
  Lateral sacral
  Iliolumbar
  Superior gluteal
  Inferior gluteal
  Umbilical
  Superior vesical
  Obturator
  Internal pudendal

Arteries/Veins
Femoral
  Profunda femoris
  Perforating arteries
  Medial circumflex femoral
  Lateral circumflex femoral
Popliteal
  Genicular arteries (any)
Anterior tibial
  Dorsalis pedis
Posterior tibial
  Lateral plantar
  Medial plantar
Fibular

Femoral sheath
Femoral canal

Great saphenous vein
Small saphenous vein

Chest

Vessels:
Aorta – ascending, descending; aortic arch
Anterior and posterior intercostal arteries and veins
Internal thoracic artery
Superior epigastric artery
Inferior epigastric artery
Brachiocephalic trunk
Right common carotid artery
Right subclavian artery
Left common carotid artery
Left subclavian artery

Pulmonary trunk, pulmonary arteries and veins
Brachiocephalic veins
Vena cava - superior and inferior

**Nerves (trace the course)**
Phrenic nerves
Vagus nerve (anterior and posterior)
Recurrent laryngeal nerve
Thoracic sympathetic trunk
Intercostal nerves

**Mediastinum**
Trachea
Carina
Bronchi
Thoracic duct
Esophagus, arterial supply and venous drainage
Paratracheal posterior parietal and tracheobronchial nodes

**Pleura**
Parietal and visceral
Pulmonary ligament

**Lungs**
Base
Apex
Hilum
Root

**Heart**
Pericardium
Axilla
Subclavian artery
Axillary vein
Thoracodorsal neurovascular bundle
Long thoracic nerve
Pectoralis major
Pectoralis minor
Serratus anterior

NECK
Platysma
Thyrohyoid
Sternothyroid
Sternohyoid
Omohyoid
Digastric
Sternocleidomastoid
Scalenes

Trachea
Epiglottis
Thyroid cartilage
Cricoid cartilage
Cricothyroid ligament
Hyoid bone

Vagus nerve
Recurrent laryngeal nerve
Superior laryngeal nerve

Common carotid artery
Superior thyroid artery
Inferior thyroid artery
Superior, middle and inferior thyroid veins
Internal, external and anterior jugular veins

Thyroid gland
Ligaments of Berry