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Duodenum, Pancreas, Liver, & Gallbladder

Tuesday, January 15, 2008

1:00 PM

Peritoneum:

Fusion fascia (behind duodenum and pancreas) - avascular, used to mobilize pancreas/duodenum from posterior ab wall

Ventral mesogastrum - liver development, forms falciform, coronary, triangular ligaments

Falciform ligament (N [269](#), [287](#)) - connects liver to umbilicus, contains round ligament of liver, continues as coronary ligament

Coronary ligament (N [287](#)) - connects liver to undersurface of diaphragm, borders bare area of liver

Right triangular ligament (N [287](#)) - right extreme of coronary ligament, continuous w/

Left triangular ligament (N [287](#)) - left extreme of coronary ligament, continuous w/

Duodenum:

Subdivisions: (N [278](#))

Superior (1st): @L1; posterior to gallbladder and quadrate lobe of liver; anterior to bile duct, gastroduodenal artery, portal vein and IVC; inferior to neck of gallbladder; superior to neck of pancreas

Descending (2nd): L1-L3; point of entry for ducts; posterior to transverse colon, mesocolon, part of jejunum; anterior to hilum of right kidney, renal vessels, ureter, psoas major; lateral to head of pancreas, pancreatic and bile ducts

Inferior (3rd): @L3; posterior to SMA, SMV and parts of jejunum; anterior to psoas major, IVC, ab aorta, right ureter; inferior to head of pancreas, SMA, SMV

Ascending (4th): L3-L2; posterior to root of mesentery, parts of jejunum; anterior to left psoas major; later to head of pancreas and inferior to body of pancreas

Suspensory muscle of the duodenum (ligament of Trietz) (N [270](#)): posterior to pancreas and splenic vein; muscle fibers from right crus of diaphragm that suspends ascending diaphragm from posterior ab wall

Circular folds (N [279](#)): folds in duodenum

Greater duodenal papilla (N [279](#)): main pancreatic and common bile duct empty; sphincter of Oddi; distal to lesser

Lesser duodenal papilla (N [279](#)): accessory pancreatic duct emptying point into duodenum

Pancreas: (N [298](#)): digestive and endocrine gland,

Head: attached to duodenum, includes uncinat process; rests on IVC, right renal artery/vein, left renal vein; C-shaped; right-most part of pancreas

Neck: btwn head and body, extends to left, overlies SMA, SMV (junction w/ splenic vein to form portal vein); posterior to pylorus

Body: stretches to left from neck; splenic a. on superior bordery; splenic v. posterior; anterior to SMA, ab aorta, left adrenal gland, kidney, vessels; posterior to omental bursa

Tail: somewhat mobile end of pancreas; lies w/in splenorenal ligament; anterior to splenic flexure and hilum of spleen

Uncinat process: lowest part of pancreas (part of head); tip lies posterior to SMA/V

Main pancreatic duct (N [294](#)): drains tail, body and lower head; unites w/ common bile duct before emptying into greater duodenal papilla

Accessory pancreatic duct: drains upper head of pancreas and empties into lesser duodenal papilla

Liver: (N [287](#))

Porta hepatis: passage of portal v, hepatic a., hepatic bile ducts, lymphatics, nerves into liver on undersurface of liver

Diaphragmatic surface: anterior and superior (and some of the posterior) parts are in contact with the diaphragm

Visceral surface: most of the posterior and inferior surface area contact abdominal viscera

Bare area: area surrounded by coronary vessels, in contact w/ diaphragm,

Lobes (N [289](#))

Right: right, large lobe

Left: left, large lobe

Quadrate: btwn gallbladder and ligamentum teres, square

Caudate: btwn IVC and ligamentum venosum, has a tail

Fissures (N [287](#)): crack btwn right and left lobes w/ ligamentum

Biliary tract: (N [294](#))

Right hepatic duct: drains right and part of caudate lobe of liver

Left hepatic duct: drains left, part of caudate, quadrate lobes of liver

Common hepatic duct: right and left ducts combine to form common hepatic duct

Cystic duct: from gall bladder

Common bile duct: cystic and common bile duct combined

Hepatopancreatic ampulla (N [297](#)): part of greater duodenal papilla; pancreatic duct unites w/ common hepatic duct here

Gallbladder: (N [294](#))

Fundus: expanded lower part; located near inner surface of anterior abdominal wall at junction of right 9th costal cartilage & right semilunar line

Body: lies in bed of gall bladder between right & quadrate lobes of liver

Neck: constricted upper part of gallbladder, continuous w/ cystic duct

Arteries:

Common hepatic a. (N [300,302](#)): from celiac trunk to liver, an parts of duodenum, pancreas and stomach

Proper hepatic a.: liver, lesser curvature of stomach

Right gastric a. (seen previously): supplies lesser curvature of stomach

Right hepatic a.: supplies right lobe of liver, part of caudate lobe; supports liver parenchyma and stroma

Cystic a.: supplies gall bladder; arises from hepatic a. in 72% of cases; other possible origins are SMA, proper hepatic, left hepatic or gastroduodenal

Left hepatic a.: supplies left and quadrate lobes, part of caudate lobe

Gastroduodenal a.: supplies upper duodenum, upper part of head of pancreas, greater curvature of stomach on right

Posterior superior pancreaticoduodenal a. (posterior arcade) (N [304](#)): gives off pancreatic and duodenal branches; spirals around common bile duct; anastomoses w/ posterior inferior pancreaticoduodenal a. in posterior pancreatic arcade

Anterior superior pancreaticoduodenal a. (anterior arcade) (N [304](#)): anastomoses w/ anterior inferior pancreaticoduodenal in anterior pancreatic arcade

Right gastro-omental a. (seen previously) (N [300](#)): supplies lower part of pyloric part of stomach, right part of greater curvature of stomach, greater omentum

Splenic a. (N [302](#)): off celiac trunk; supplies pancreas, spleen, greater curvature of stomach

Dorsal pancreatic a.: supplies pancreas near neck; right branch anastomoses w/ anterior superior pancreaticoduodenal in prepancreatic arcade

Inferior pancreatic a.: from left br. Of dorsal pancreatic to supply lower part of body of pancreas

Prepancreatic arcade:

Pancreatic brs.: supplies pancreas

Great pancreatic a.: supplies body of pancreas

Caudal pancreatic brs.: supplies tail of pancreas

Superior mesenteric a. (N [301,302,304,306](#)): branches below

Inferior pancreaticoduodenal a. : gives off branches below to supply lower duodenum and head of pancreas

Anterior inferior pancreaticoduodenal a. (anterior arcade): anastomoses w/ anterior superior to form anterior arcade

Posterior inferior pancreaticoduodenal a. (posterior arcade): anastomoses w/ posterior superior to form posterior arcade

Arteriae rectae: straight arteries off arcades

Aberrant hepatic aa. (if present) (N [305](#)): left comes off gastric, right off SMA

Veins:

Round ligament of the liver (ligamentum teres hepatis) (N [229,287](#)): w/in falciform lig; connecting liver to umbilicus, remnant of umbilical v.

Ligamentum venosum (N [229,287](#)): lies in attachment of hepatogastric lig to liver btwn caudate and left lobe; remnant of obliterated ductus venosus

Portal v. (N [312](#)): union of SMV and splenic; right and left branches into liver sinusoids; connect w/ caval drainage at esophagus, rectum, umbilicus and retroperitoneal gut structures

Splenic v. (N [309,311,312](#)): drains spleen

Inferior mesenteric v. (N [311,312](#)): superior rectal, sigmoid and left colic veins; goes to splenic or SMV; drains gut distal from splenic flexure; courses lateral to 4th part of duodenum

Superior mesenteric v. (N [310,311,312](#)): pancreaticoduodenal, jejunal, right and middle colic veins; drains gut proximal to splenic flexure

Portacaval anastomoses (N [312](#))

Esophageal vv. (N [238](#)): connects w/ esophageal brs of left gastric; forms potential portal-caval anastomoses; esophageal varices when enlarged

Superior rectal vv. (N [387](#))

Paraumbilical vv. (N [256](#)): drains falciform and round lig of liver; blood may pass retrograde into body wall veins near umbilicus forming caput medusa

Posterior body wall vv. (N [312](#)):

Hepatic vv. (N [265](#))

Left: lateral segment and superior portion of medial segment of left lobe of liver

Middle: inferior portion of medial segment of left lobe & inferior part of anterior segment of right lobe

Right: posterior segment & superior portion of anterior segment of right lobe of liver

Inferior vena cava (N [265,274](#)) yeah....

Clinical Terms:

Pancreatitis: acute or chronic inflammation of the pancreas, which may be asymptomatic or symptomatic; due to autodigestion of pancreatic tissue by its own enzymes; caused by alcoholism or biliary tract disease, less commonly associated with hyperlipemia, hyperparathyroidism, abdominal trauma, vasculitis or uremia

Pancreatic cancer: more than 90% are ductal adenocarcinomas w/ islet cell carcinomas making up the rest; ab pain, swelling, jaundice, weight loss and anorexia

Gall stones: concretion in gall bladder or a bile duct, composed chiefly of cholesterol crystals

Jaundice: yellow of skin and whites of eyes by bilirubin

Cholecystectomy: surgical removal of gall bladder, laproscopic or traditional

Cirrhosis & portal hypertension: liver disease characterized by loss of normal microscopic lobular architecture, with fibrosis and nodular regeneration; leads to increase in portal venous pressure that can result in esophageal varices, hemorrhoids, enlarged veins on the anterior ab wall and ascites

Ascites: fluid within ab cavity

Kocher maneuver: reflecting duodenum and pancreas medially by cutting through fusion fascia along right side of descending part of duodenum

Duodenal stenosis/atresia: narrowing of the duodenum/blind end (congenital, caused by failure of duodenum to recanalize, 70% have other malformations including Down's, cardiac or GI defects)