

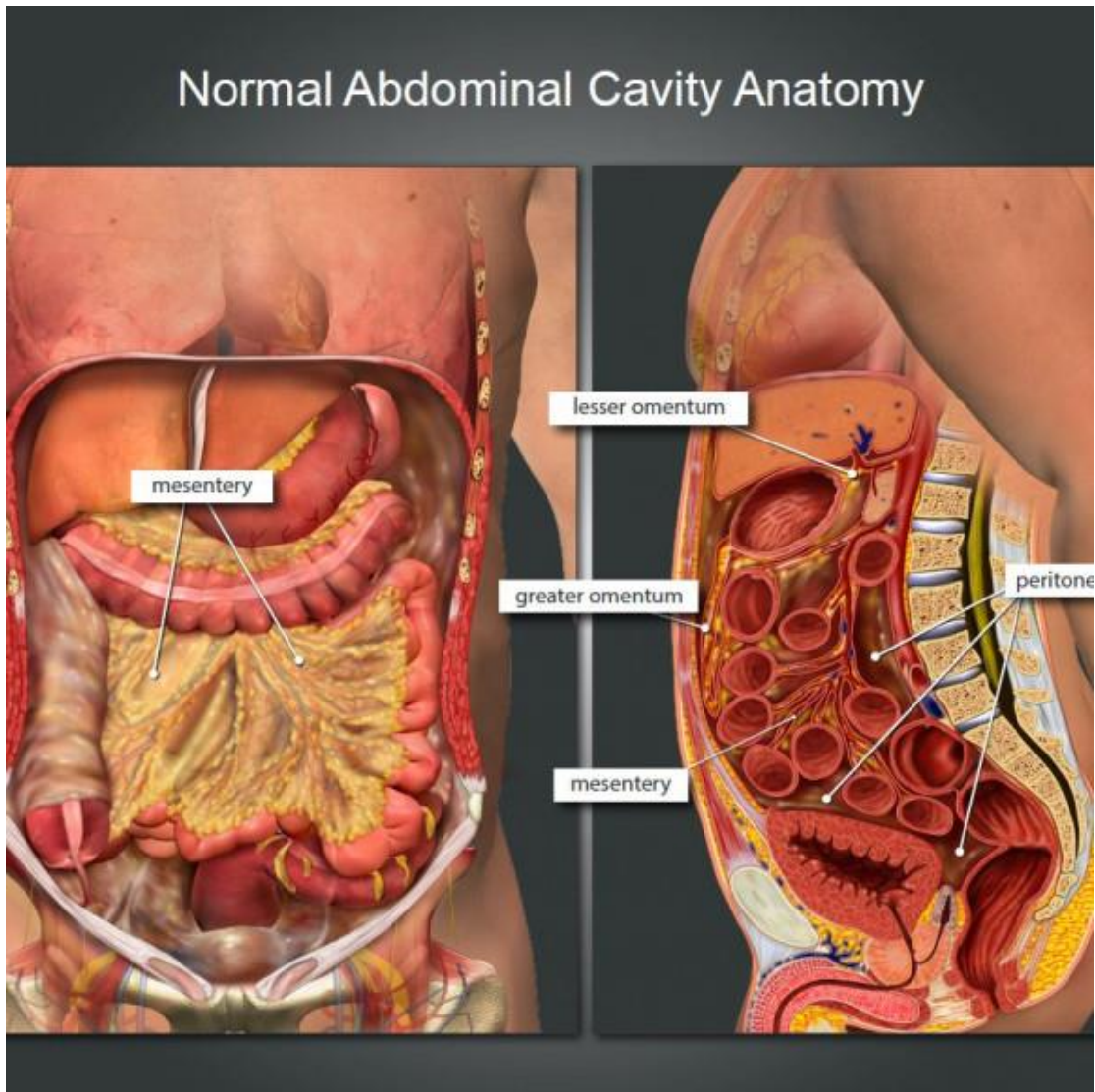
The abdomen and pelvic regions are continuous with each other, making up the distal part of the trunk. Bar the brain, heart and lungs, this region contains virtually all your body organs, including those involved in the digestive, endocrine, lymphatic, urinary and reproductive systems.

Key facts about the abdomen and pelvis

Table quiz

Abdomen	<p>Boundaries: anterolateral and posterior abdominal walls, diaphragm, pelvic inlet</p> <p>Contents: stomach, small intestine, large intestine, vermiform appendix, pancreas, spleen, liver, gallbladder, kidneys, ureters, adrenal glands</p>
Pelvis	<p>Boundaries: pelvic inlet, pelvic girdle, pelvic diaphragm</p> <p>Contents: internal genitalia, external genitalia, urinary bladder, urethra, rectum</p> <p>and anus</p>
Blood supply	<p>Abdomen: celiac trunk, superior mesenteric artery, middle suprarenal arteries, renal arteries, inferior mesenteric artery, inferior phrenic artery and lumbar arteries; inferior vena cava, hepatic portal vein</p> <p>Pelvis: internal iliac arteries, gonadal arteries, median sacral artery and the superior rectal artery; inferior vena cava, hepatic portal vein</p>
Innervation	<p>Abdomen: vagus nerve (CN X), prevertebral ganglia, lower thoracic, pelvic and lumbar splanchnic nerves; they form plexuses: myenteric, celiac, superior mesenteric, inferior mesenteric, superior hypogastric and inferior hypogastric plexuses.</p> <p>Pelvis: lumbosacral trunk (L4, L5), lumbar plexus (L1-L4), sacral plexus (L4-S4), coccygeal plexus (S4-Co), lumbar, sacral and pelvic splanchnic nerves</p>

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Abdominal cavity
Cavitas abdominis

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Synonyms: Cavity of abdominal compartment, Cavitas abdominalis

Abdomen

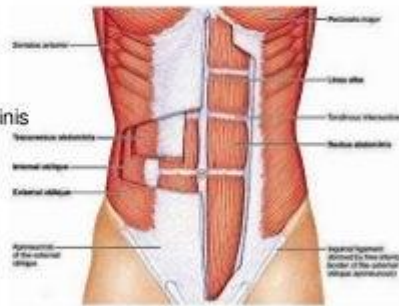
The abdomen is the body region found between the thorax and the pelvis. Its superior aperture faces towards the thorax, enclosed by the diaphragm. Inferiorly the abdomen is open to the pelvis, communicating through the superior pelvic aperture (pelvic inlet). These two apertures, together with abdominal walls, bound the abdominal cavity.

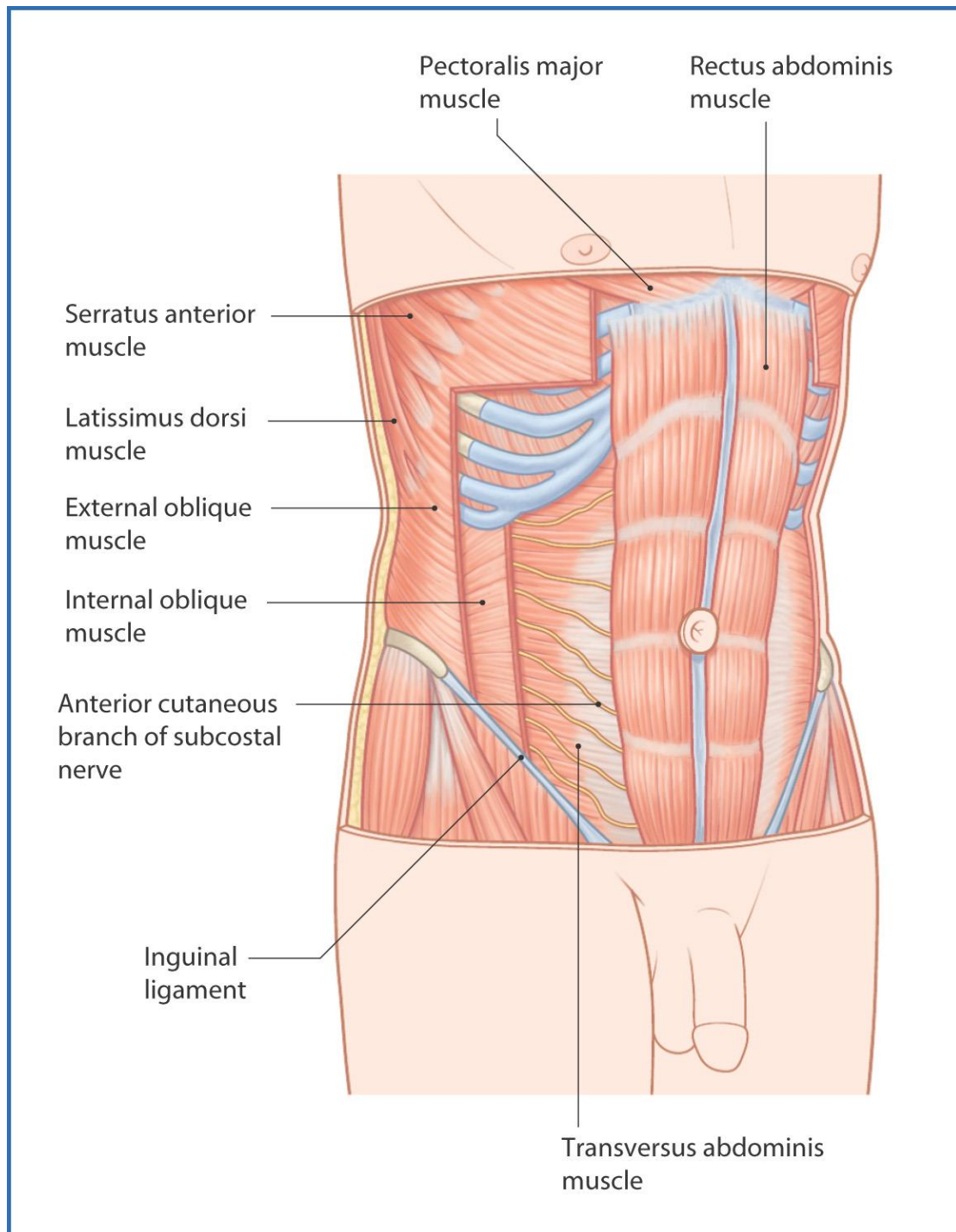
There are two musculofascial abdominal walls; anterolateral and posterior. They attach to the surrounding bony structures; vertebral column, inferior margin of the thoracic cage and superior margins of the bony pelvis. The predominantly soft tissue structure of the abdominal walls gives them the flexibility to adjust to the dynamics of the abdominal viscera.

For easier clinical orientation, abdomen is divided into four quadrants and nine regions. Quadrants include left upper, left lower, right upper and right lower. The regions include right and left hypochondrium, right and left lumbar, right and left inguinal, epigastric, umbilical and hypogastric regions.

Muscles

- External oblique
- Internal oblique
- Transversus abdominis
- Rectus abdominis
- Pyramidalis





Abdominal organs include parts of the:

- Digestive system - stomach, small intestine, large intestine, exocrine pancreas, liver and gallbladder
- Urinary system - kidneys and ureters
- Immune system - spleen
- Endocrine system - adrenal glands, endocrine pancreas

Peritoneum and peritoneal cavity

Visceral peritoneum

Peritoneum viscerale

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Synonyms: Peritoneum viscerale

The peritoneum is a two-layered membranous sac that:

- Covers the abdominal walls with its parietal layer
- Lines most of the abdominal viscera with its visceral layer

Between the sheets is a thin space called the peritoneal cavity containing small amounts of serous peritoneal fluid. Since the peritoneal layers are continuous with each other, they form recesses (pouches) on sites where the parietal reflects to the visceral layer.

Some organs such as the kidney, adrenal glands and ureters are not covered with the visceral peritoneum, and thus are called retroperitoneal organs. The remainder of the abdominal organs are entirely covered with the visceral layer and are called intraperitoneal organs.

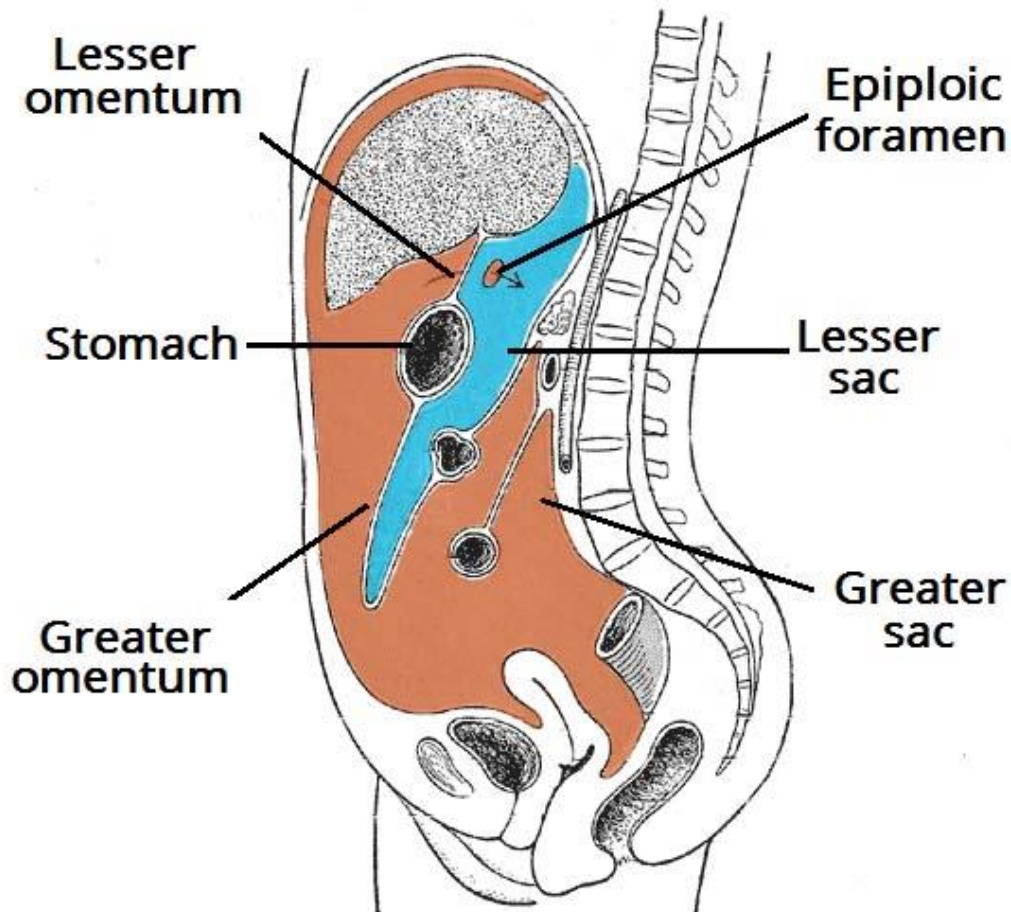
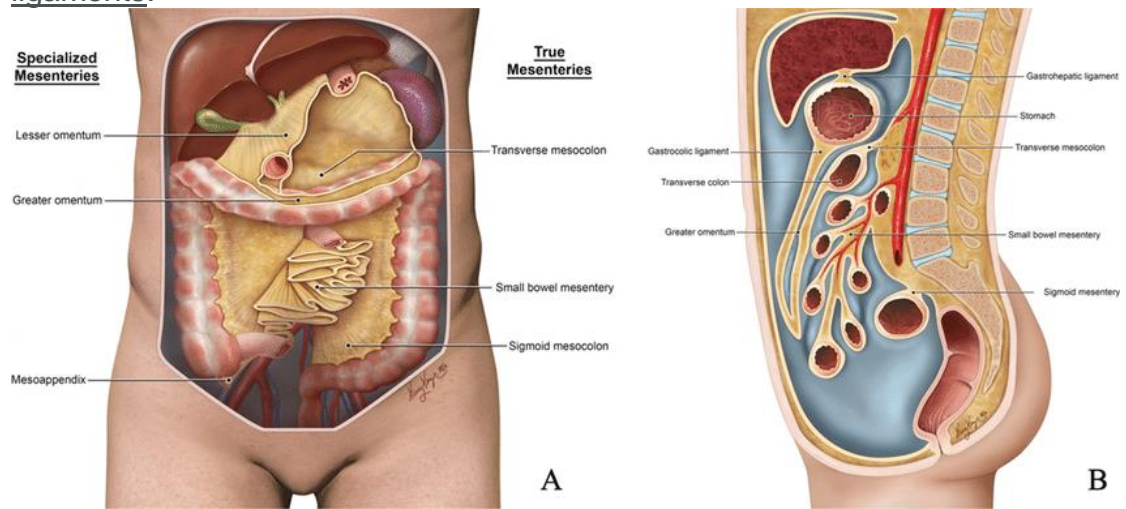
The peritoneum has two divisions; greater sac and lesser sac (omental bursa).

The lesser sac is the smaller of the two, it is a hollow space posterior to the stomach intended to cushion its movements. The greater sac forms the main abdominal cavity and is further divided by the transverse colon into the supracolic and infracolic compartments. The liver, stomach and spleen sit within the supracolic compartment, while the small intestine, ascending and descending colon are held within the infracolic. The lesser and greater sacs communicate via the omental foramen.

Besides sacs, the peritoneum features peritoneal formations; the mesentery, greater and lesser omentum and peritoneal ligaments.

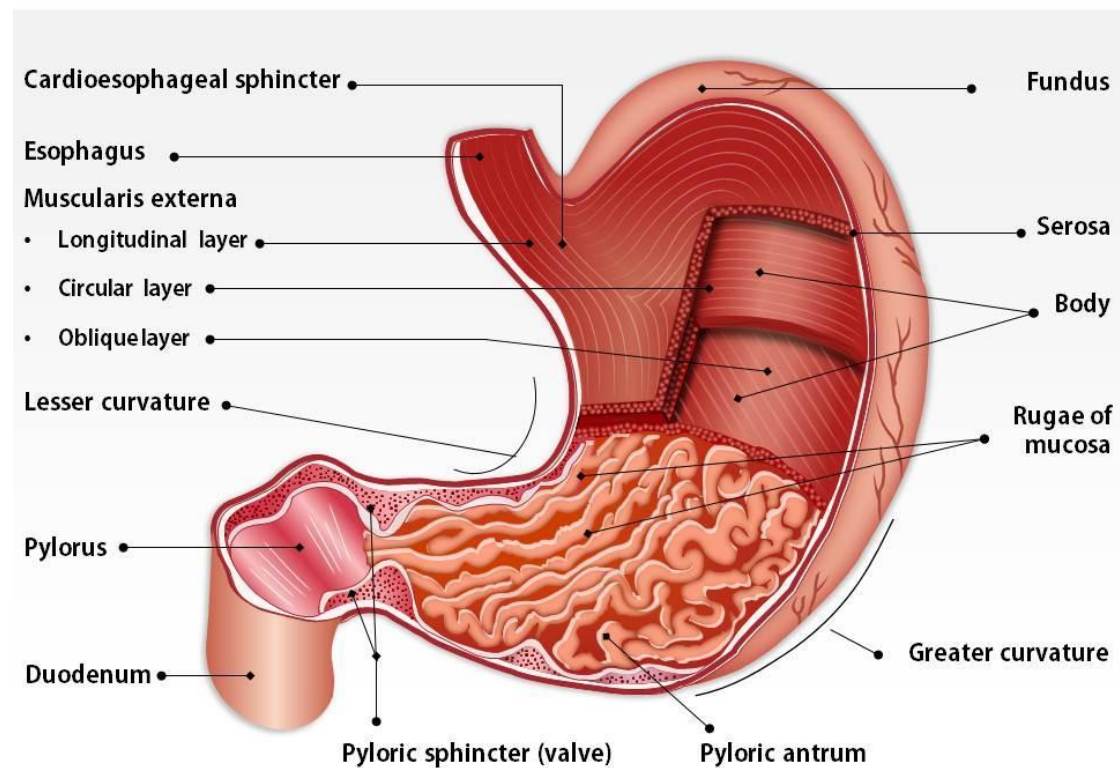
- Mesentery attaches an organ to the abdominal wall and carries its neurovascular bundle (mesentery proper, transverse mesocolon, sigmoid mesocolon, mesoappendix)
- Greater and lesser omenta hang from the greater and lesser curvatures of the stomach and attach to the transverse mesocolon and the liver, respectively.

- Peritoneal ligaments fixate organs to other viscera or to the abdominal wall, and carry their vessels and nerves. Based on where they originate, they are grouped into either splenic, gastric or hepatic ligaments.



Stomach

Stomach Anatomy



Stomach
Gaster
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Synonyms: Ventriculus

The stomach is a hollow muscular organ found in the epigastric region. It extends from the esophagus and ends at the junction with the duodenum. The stomach has four parts:

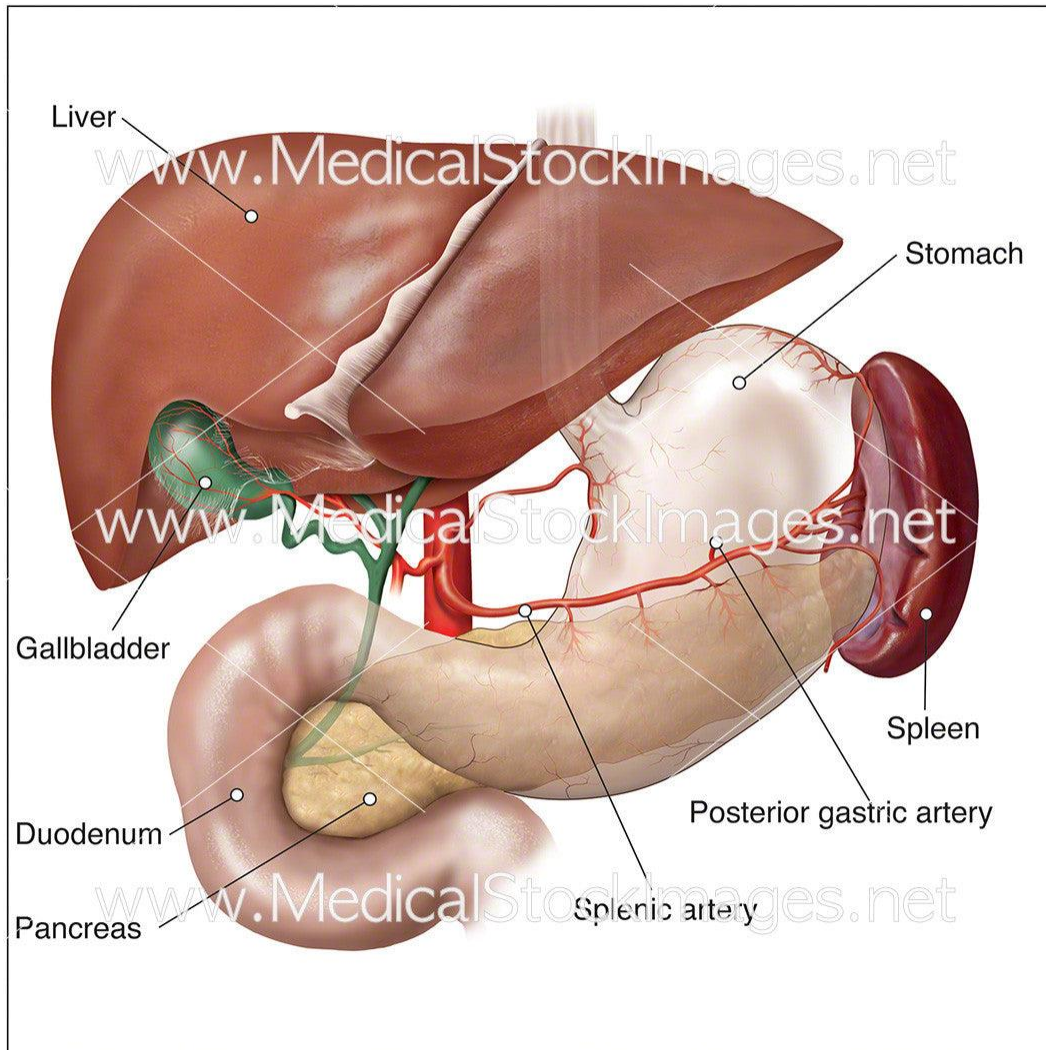
- Cardia
- Corpus
- Fundus
- Pylorus

Stomach function is the mechanical and chemical digestion of food. It releases gastric acid which activates digestive enzymes, breaking food particles into smaller molecules.

Spleen

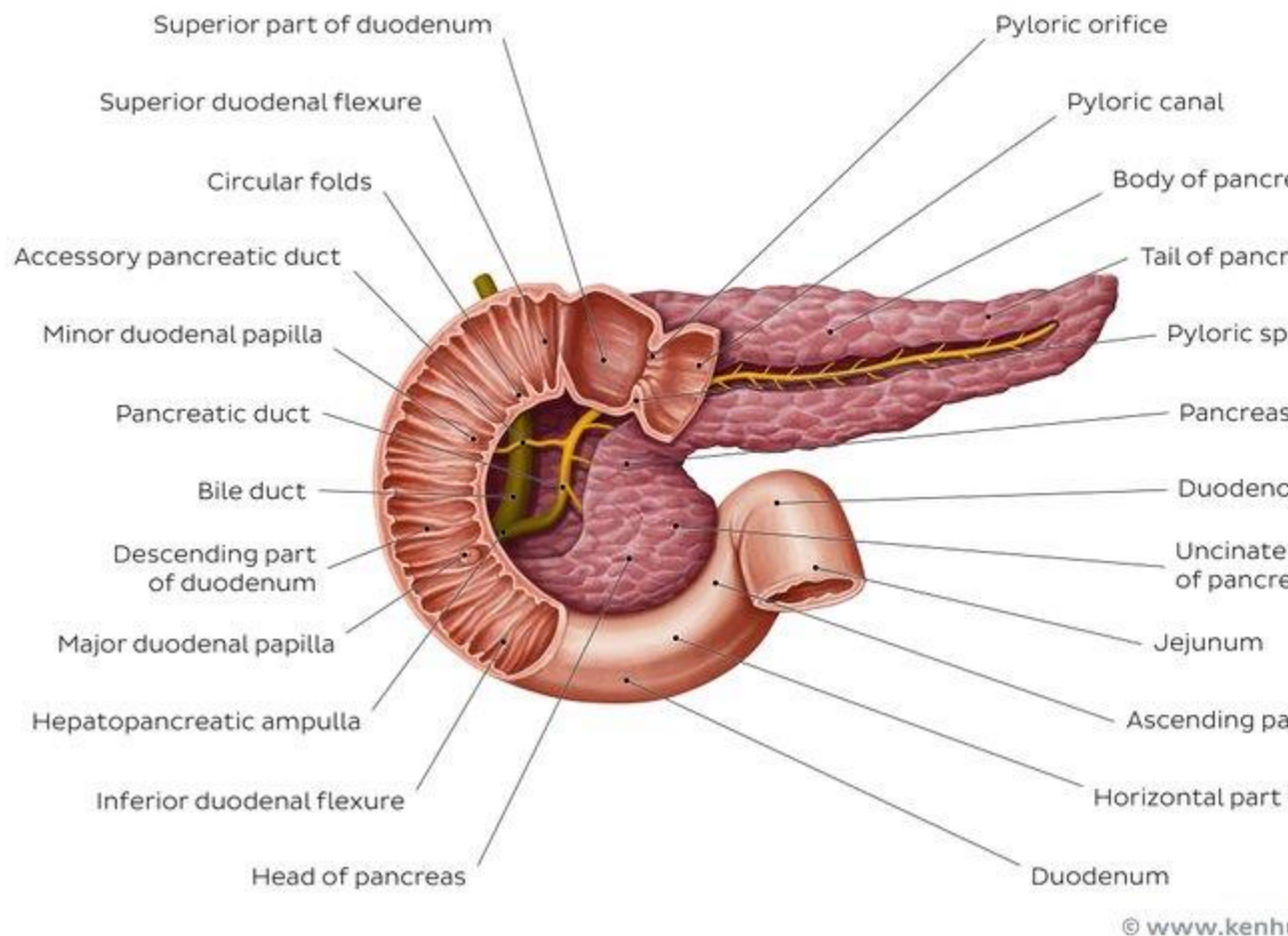
The spleen is an organ of the immune system. It is found in the left hypochondriac region, hidden posteriorly to the stomach and anteriorly to the ribs 9 and 10. The spleen is the largest organ of the lymphatic system, as it provides the conditions for white blood cells maturation. By filtering blood, the spleen also recycles damaged erythrocytes.

Liver, Stomach, Pancreas, Spleen Anatomy



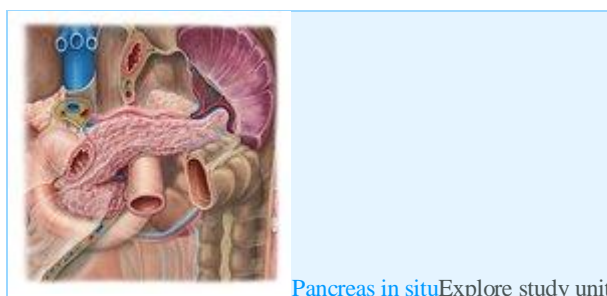
Pancreas

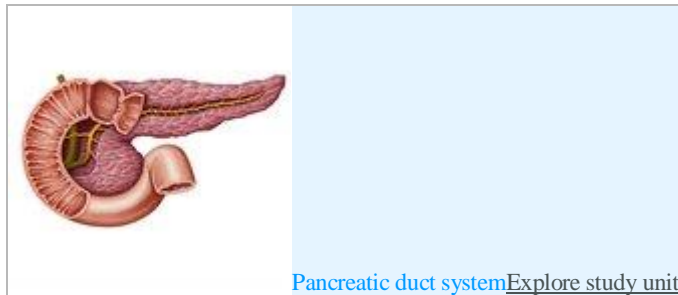
The pancreas is a gland squeezed between the stomach and duodenum. It has a head, neck and a tale. Functionally, its tissue is divided into endocrine and exocrine parts.



Pancreas and pancreatic duct system: an overview.

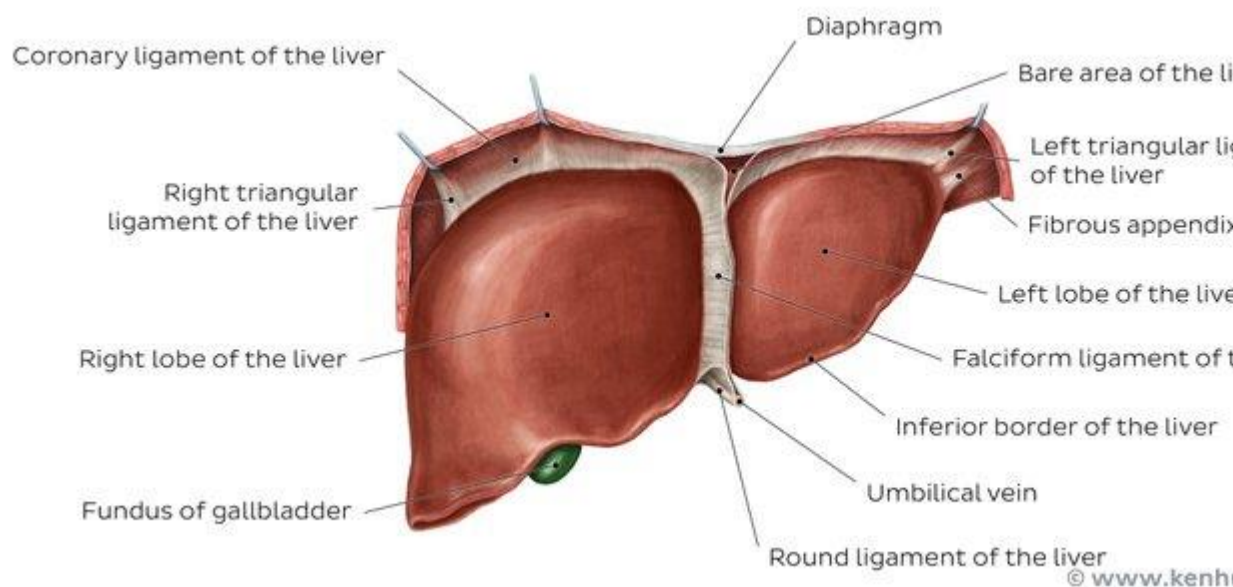
The endocrine part regulates the blood levels of glucose, while the exocrine part secretes pancreatic juice. This juice contains digestive enzymes that pour into the duodenum via the pancreatic duct system.





Liver and gallbladder

The liver is the largest accessory gland of the digestive system. It extends through the epigastric and hypochondriac regions. The liver is divided into left and right lobes, while its posterior surface also shows the quadrate and caudate lobes.

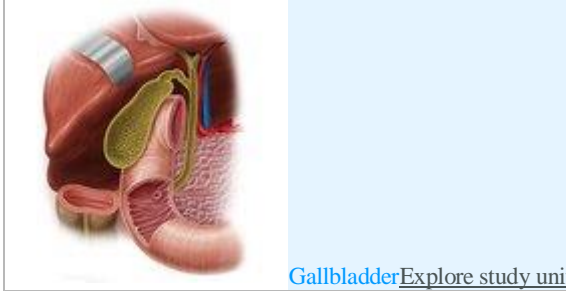


Liver anatomy: Diagram

The liver has more than 500 functions. Major roles include; processing substances absorbed from the intestine thus regulating the metabolic profile of the body, metabolising drugs and chemicals, synthesizing proteins (blood clotting proteins, for example) and storage of glucose in the form of glycogen. In addition, the liver secretes bile which helps in fat digestion. Bile flows from the liver to the gallbladder for storage via a system of biliary ducts. The gallbladder empties into the duodenum on demand. Master the anatomy of the liver and gallbladder with our articles, video tutorials and quizzes.



[Overview of the liver](#) [Explore study unit](#)



[Gallbladder](#) [Explore study unit](#)

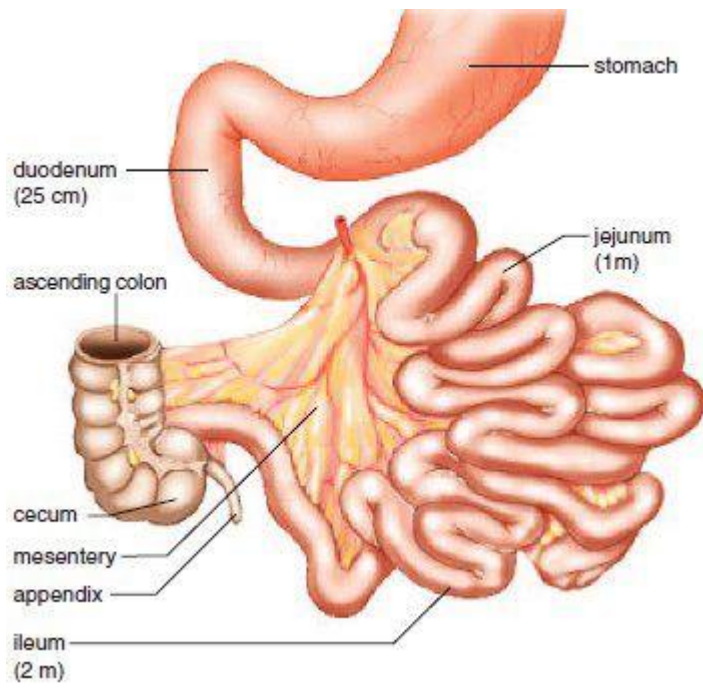
Small intestine

Duodenum

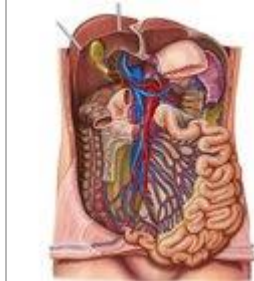
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Synonyms: Intestinum duodenum

The small intestine extends from the pylorus of the stomach, curling through the upper left and lower right quadrants of the abdomen. It consists of the duodenum, jejunum and ileum. The terminal ileum opens to the cecum of the large intestine at the ileocecal junction,. The small intestine function is to digest and absorb both water and nutrients from the ingested food.

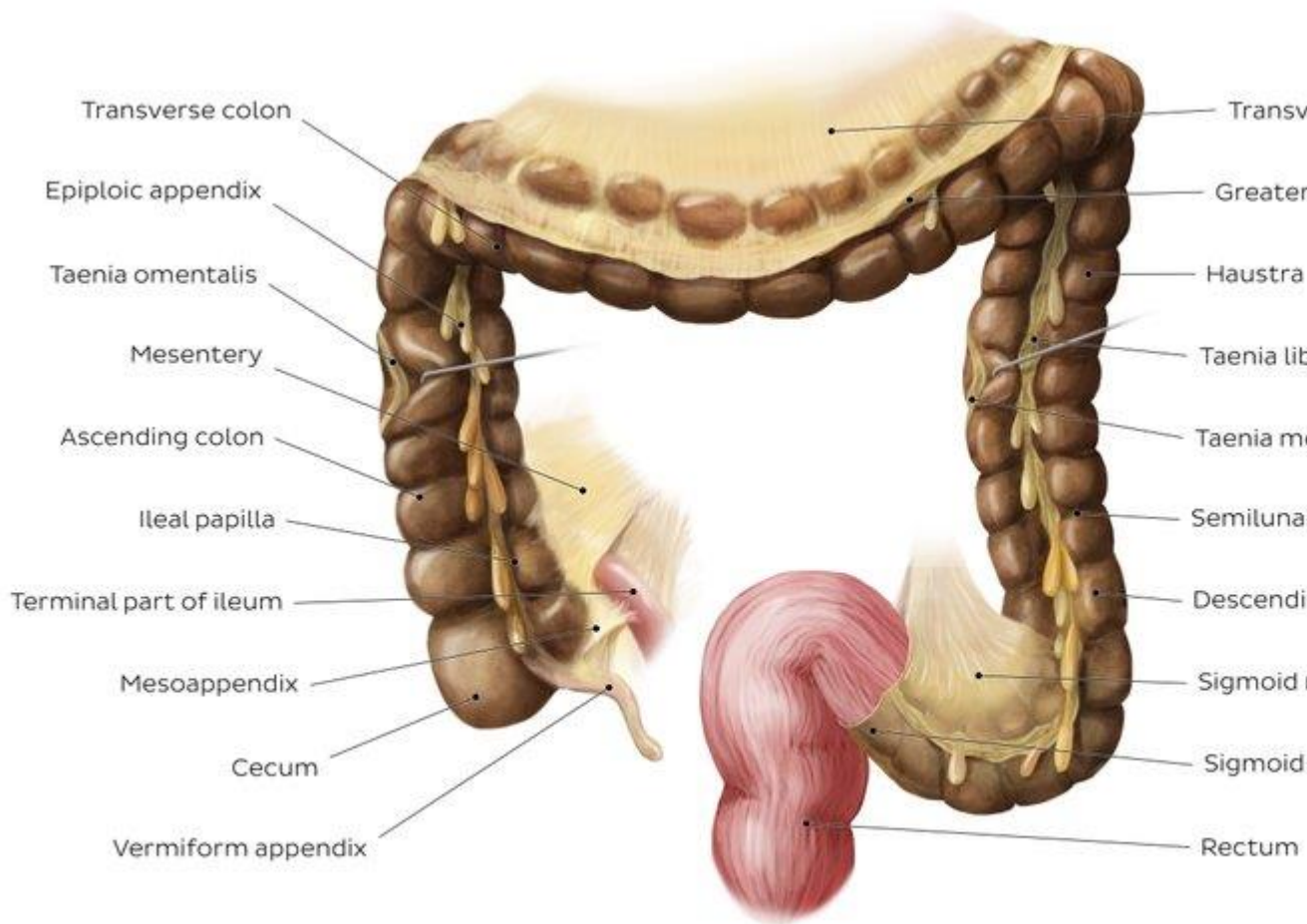


[Duodenum](#) [Explore study unit](#)



[Arteries and veins of the small intestine](#) [Explore study unit](#)

Large intestine

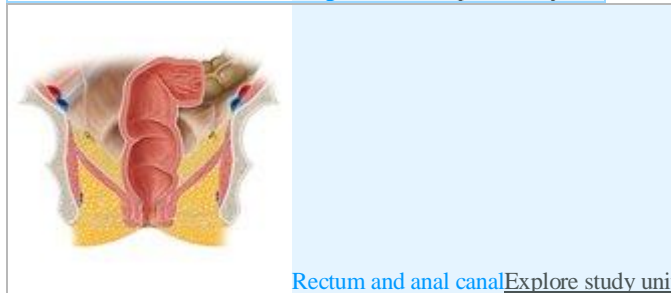


Large intestine anatomy: Diagram

The large intestine extends along the lateral margins of the abdominal quadrants by continuing from the ileocecal valve. It consists of the cecum and vermiform appendix, ascending colon, transverse colon, descending colon, sigmoid colon, rectum, anal canal and anus. The large intestine function is to absorb the remainder of nutrients that weren't absorbed in the small intestine while passing the indigestible parts to the rectum. The rectum then expels the feces through the anal canal and anus.

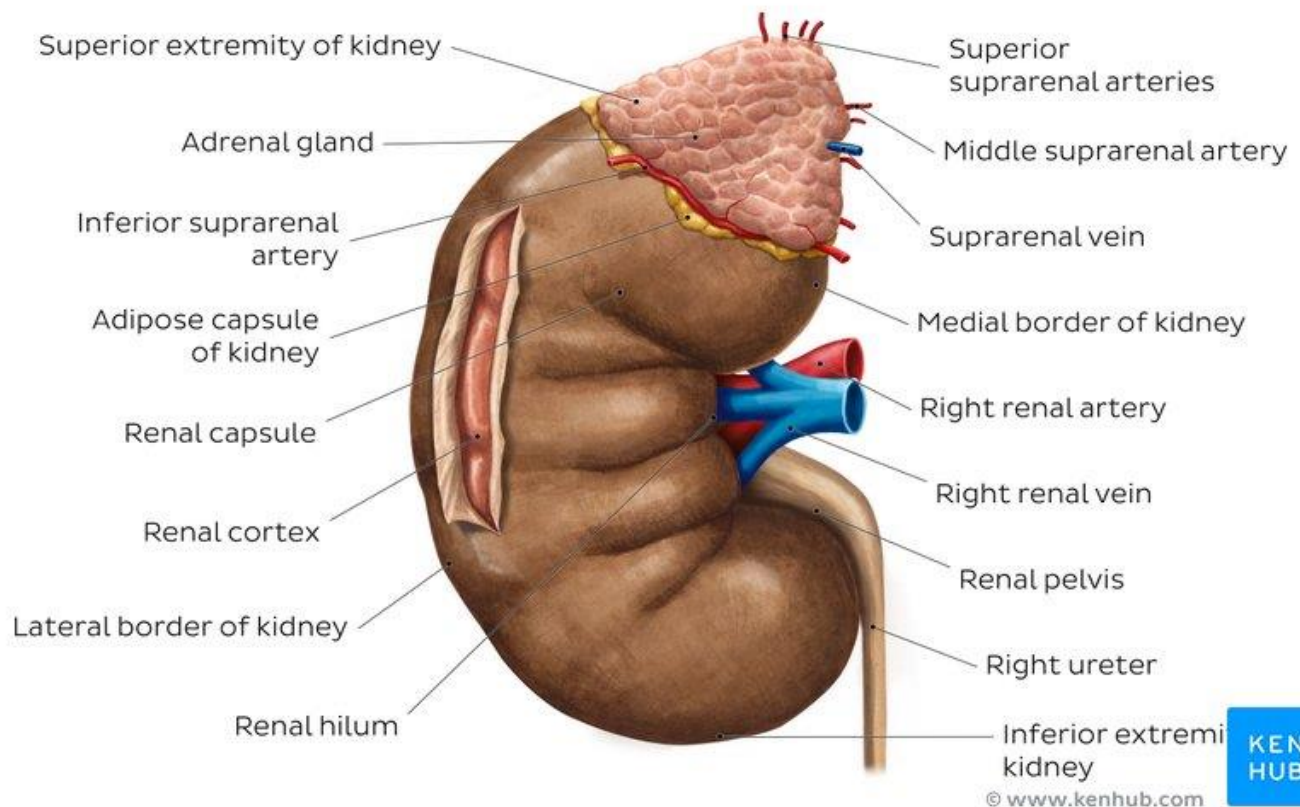


[Large intestine](#) [Explore study unit](#)



[Rectum and anal canal](#) [Explore study unit](#)

Kidneys, ureters and adrenal glands



Kidney, ureter and adrenal gland: Diagram

Kidneys are retroperitoneal organs lying against the posterior abdominal wall at the T12-L2 level. They have superior and inferior poles, medial and lateral margins. Blood vessels enter through the kidney hilum. Kidney function is to

filter the blood brought by the renal arteries, from which they extract unnecessary substances and pass them through their tubular system of nephrons and collecting ducts. This system processes the blood ultrafiltrate and forms urine, which is conveyed from the kidney to the urinary bladder via the ureters.

Despite their location, suprarenal glands (adrenal glands) have nothing to do with the urinary system; we mention them here as they sit on the superior poles of each kidney. Adrenal glands produce mineralocorticoid, corticosteroid and androgen hormones that regulate blood pressure, body mineral levels, sexual development and function.

Pelvis

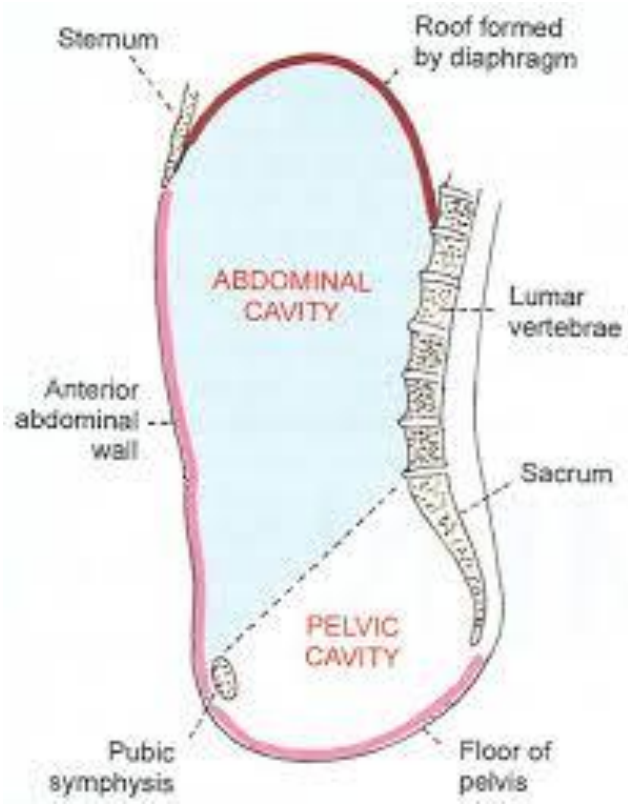
Pelvic cavity

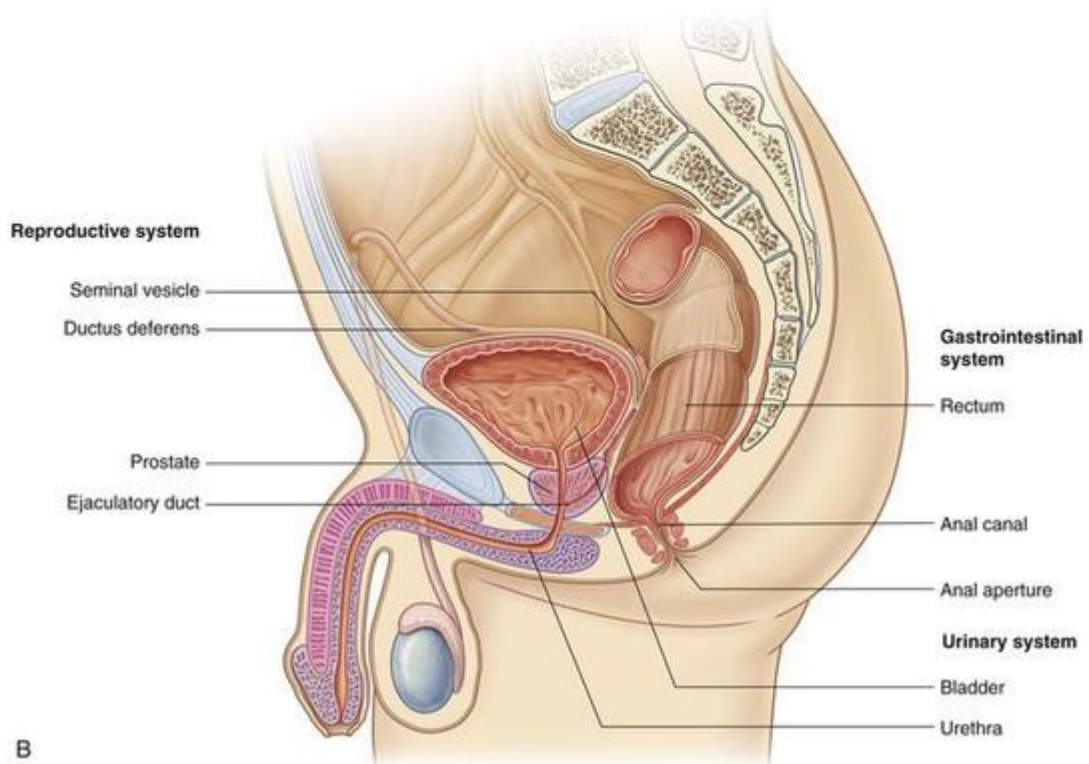
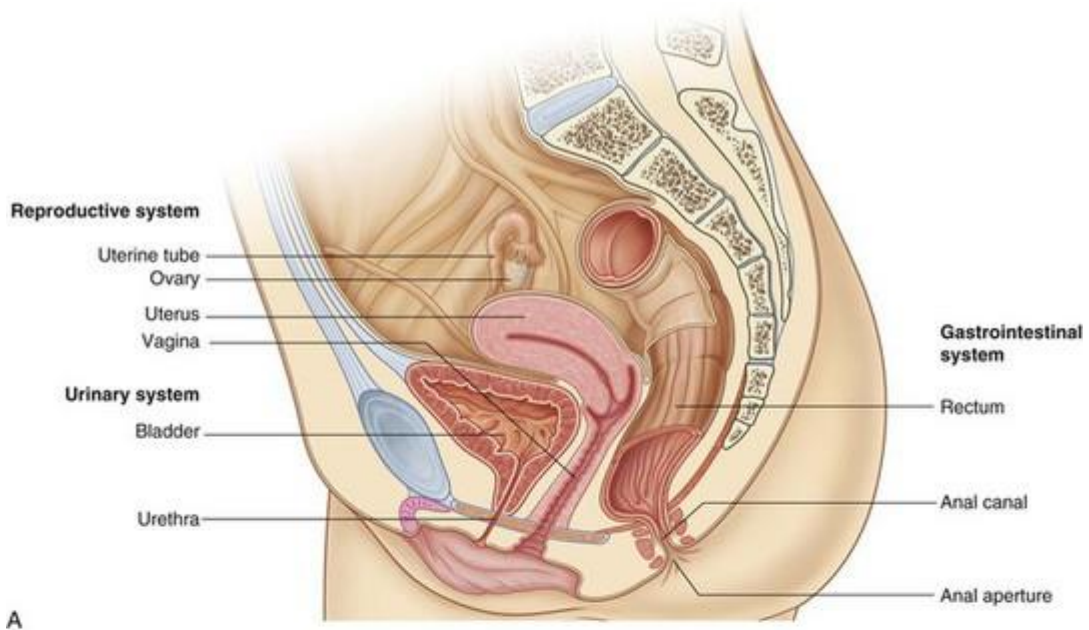
Cavitas pelvis

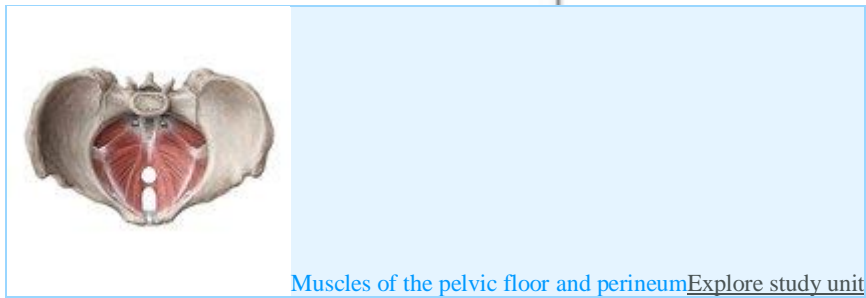
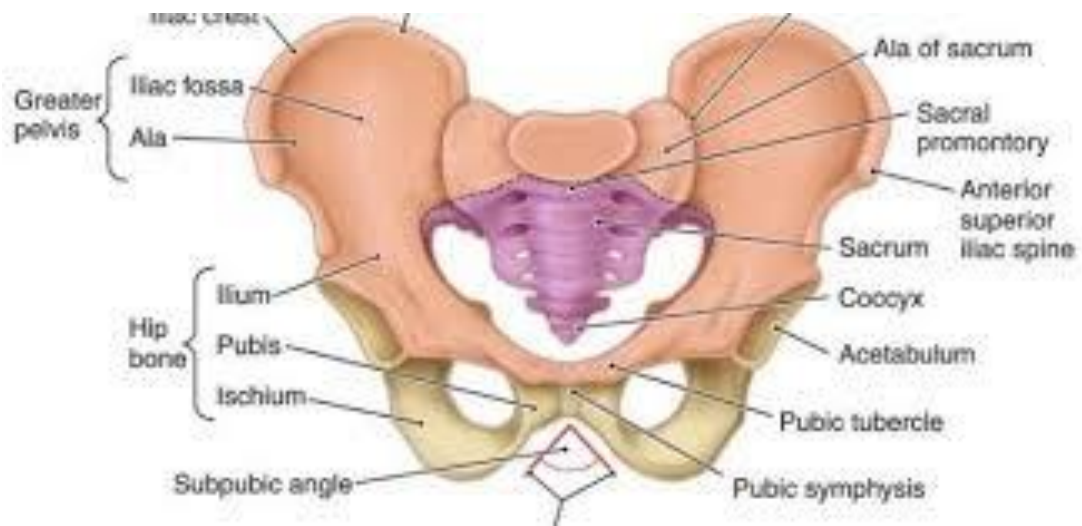
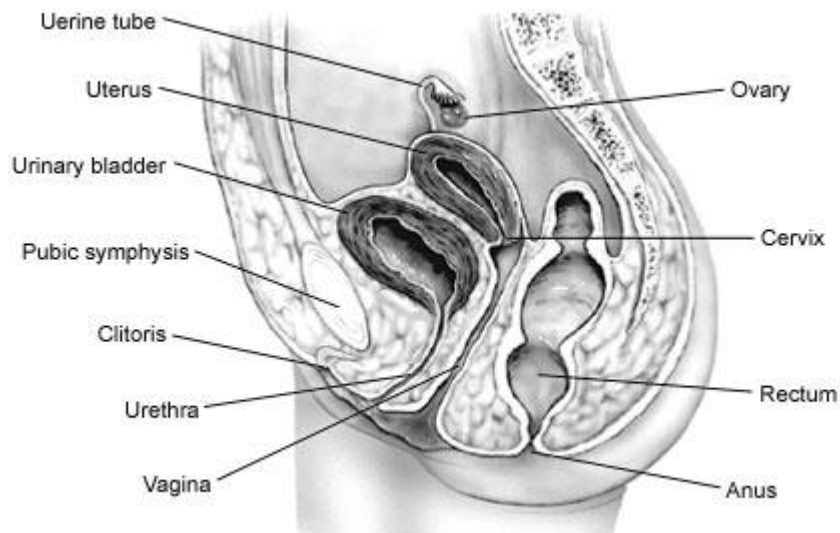
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Synonyms: Cavitas pelvina

The pelvis is classified as a region of the trunk. It extends between the abdomen and the lower extremities, bounded by the bones of the pelvic girdle (hip bones, sacrum and coccyx). The pelvis opens superiorly to the abdomen through the pelvic inlet, while its inferior opening (the pelvic outlet) is closed by the pelvic floor (levator ani and coccygeus muscles). The pelvic inlet is the boundary between the greater pelvis superiorly and lesser pelvis inferiorly. The greater pelvis contains the inferior parts of some abdominal viscera (terminal ileum, cecum, sigmoid colon). The lesser pelvis contains the internal genital organs, distal portions of the urinary system (urinary bladder and urethra) and the perineum.







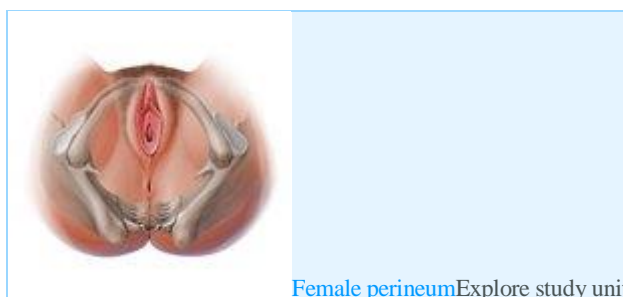
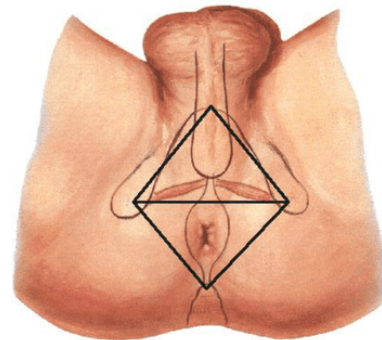
Perineum

The perineum is the area found between the legs, inferior to the pelvic floor (pelvic diaphragm). It contains the external genitalia of both sexes.

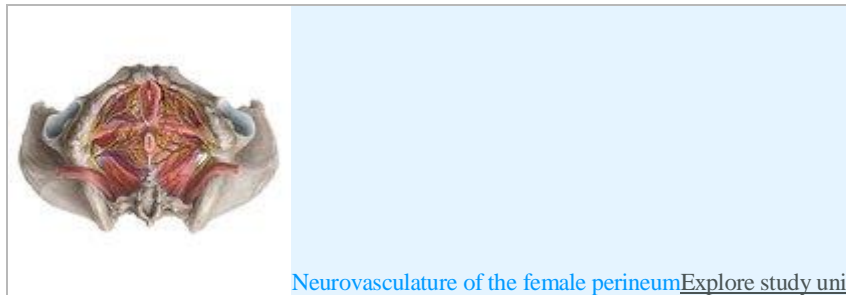
From the inferior aspect, the perineum is bordered by pubic symphysis anteriorly, sacrum and coccyx posteriorly and ischial tuberosities on lateral sides. An imaginary line between the ischial tuberosities divides the perineum into an anterior and posterior triangle. The former is the urogenital triangle, and the latter is the anal triangle.

The Perineum

- The **perineum** refers to the diamond-shaped region roughly extending between the coccyx and pubic symphysis
- **Boundaries of the perineum**
 - Pubic symphysis (**anteriorly**)
 - Inferior pubic rami and ischial rami (**anterolaterally**)
 - Ischial tuberosities (**laterally on each side**)
 - Sacrotuberous ligaments (**posterolaterally**)
 - Tip of coccyx (**posteriorly**)

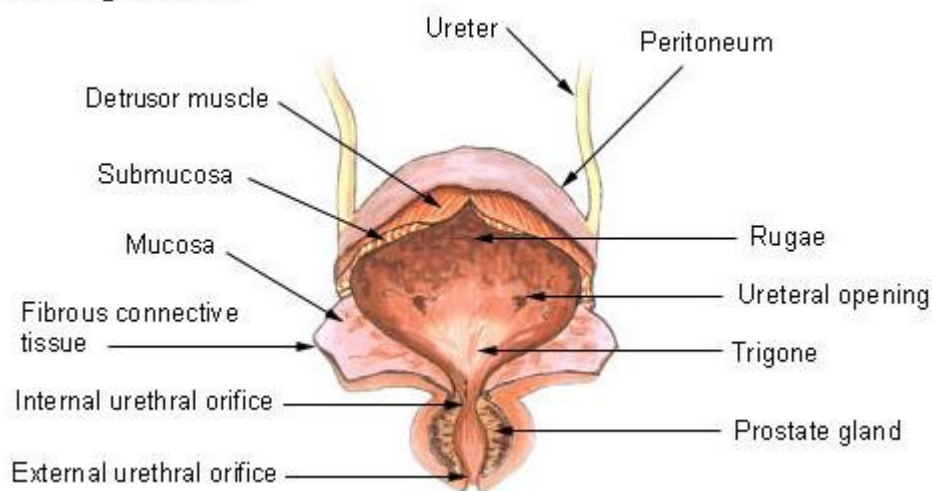


Female perineum Explore study unit



Urinary bladder and urethra

Urinary Bladder



Urinary bladder

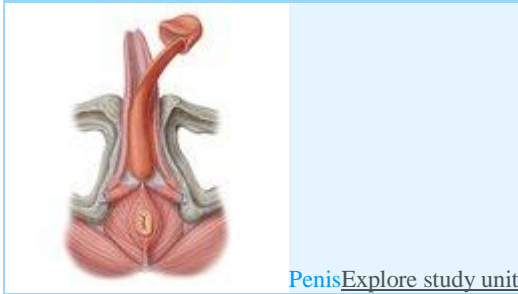
Vesica urinaria

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The urinary bladder is a hollow muscular sac that stores urine. It is found in the greater pelvis posterior to the pubic symphysis. Its superior surface is covered with peritoneum, so male and female peritoneal relations differ in terms of pouches. Males have the rectovesical pouch between the rectum and urinary bladder, while females have rectouterine pouch between the bladder and the uterus. The bladder stores urine brought by the ureters, expelling it on command through the urethra in socially acceptable situations in the act of micturition (urination).



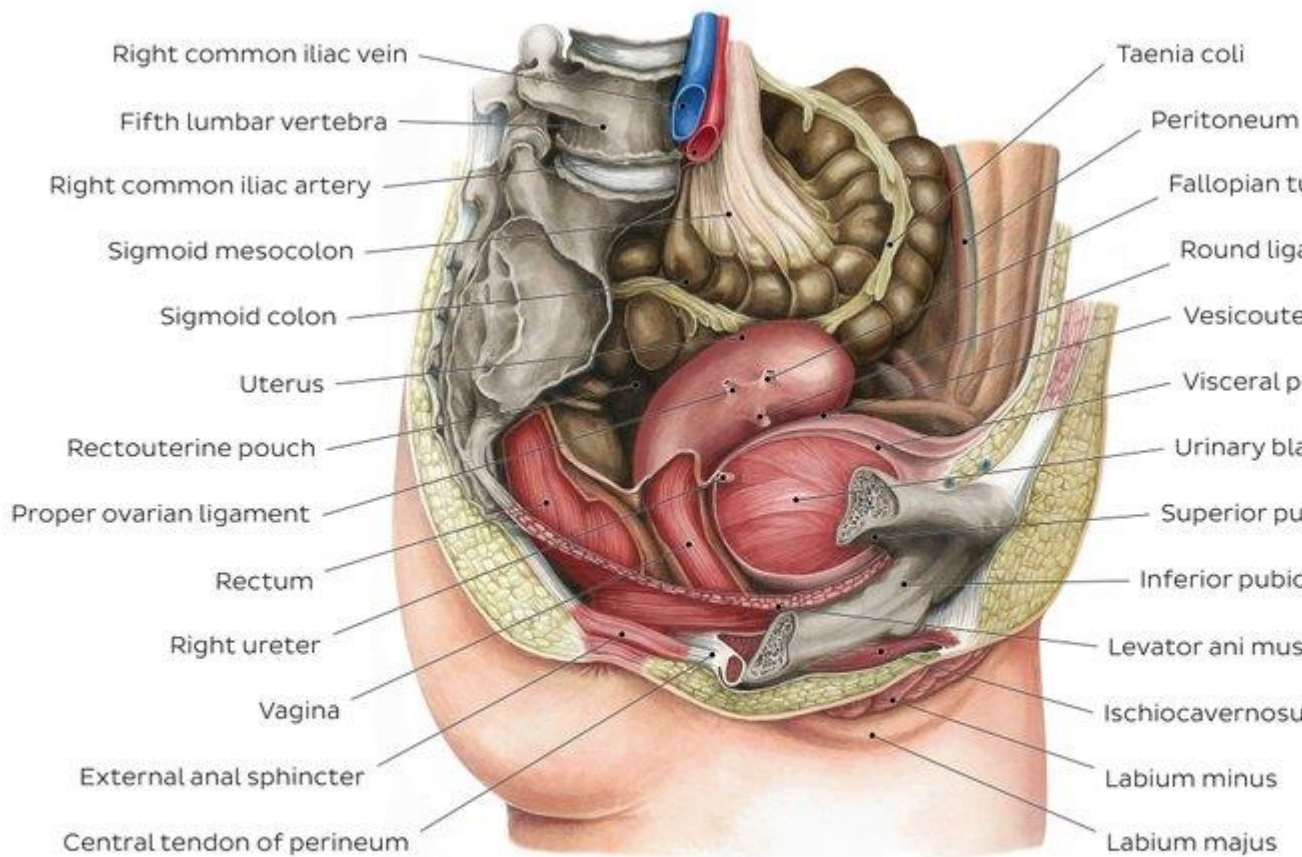
[Female urinary bladder and urethra](#) [Explore study unit](#)



[Penis](#) [Explore study unit](#)

Female reproductive organs

Female reproductive anatomy focuses on two groups of organs; internal female genitalia and external female genitalia. Internal genitalia includes the ovaries, uterus, uterine tubes and vagina. External genitals are found in the perineum and include the labia majora and minora, mons pubis, clitoris, vestibule (vaginal orifice and external urethral meatus), hymen, vestibular bulb and vestibular glands.



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Female pelvis and perineum

The ovaries are where the female reproductive cells live. Once the oocytes (eggs) mature, they are released into the uterine tubes, one per every 28 days. In the tubes, an egg cell may become fertilized. If it does, it travels through the uterine tube to the body of the uterus. It then incorporates into the uterine wall and starts growing, from embryo to fetus. In case an egg cell is not fertilized, the uterus notices that and starts desquamating and expelling the unneeded inner uterine lining through the vagina. You would recognize this moment as menstrual bleeding. The entire functional design of the external genitalia is to provide sexual pleasure and passage for male copulatory organ (penis).

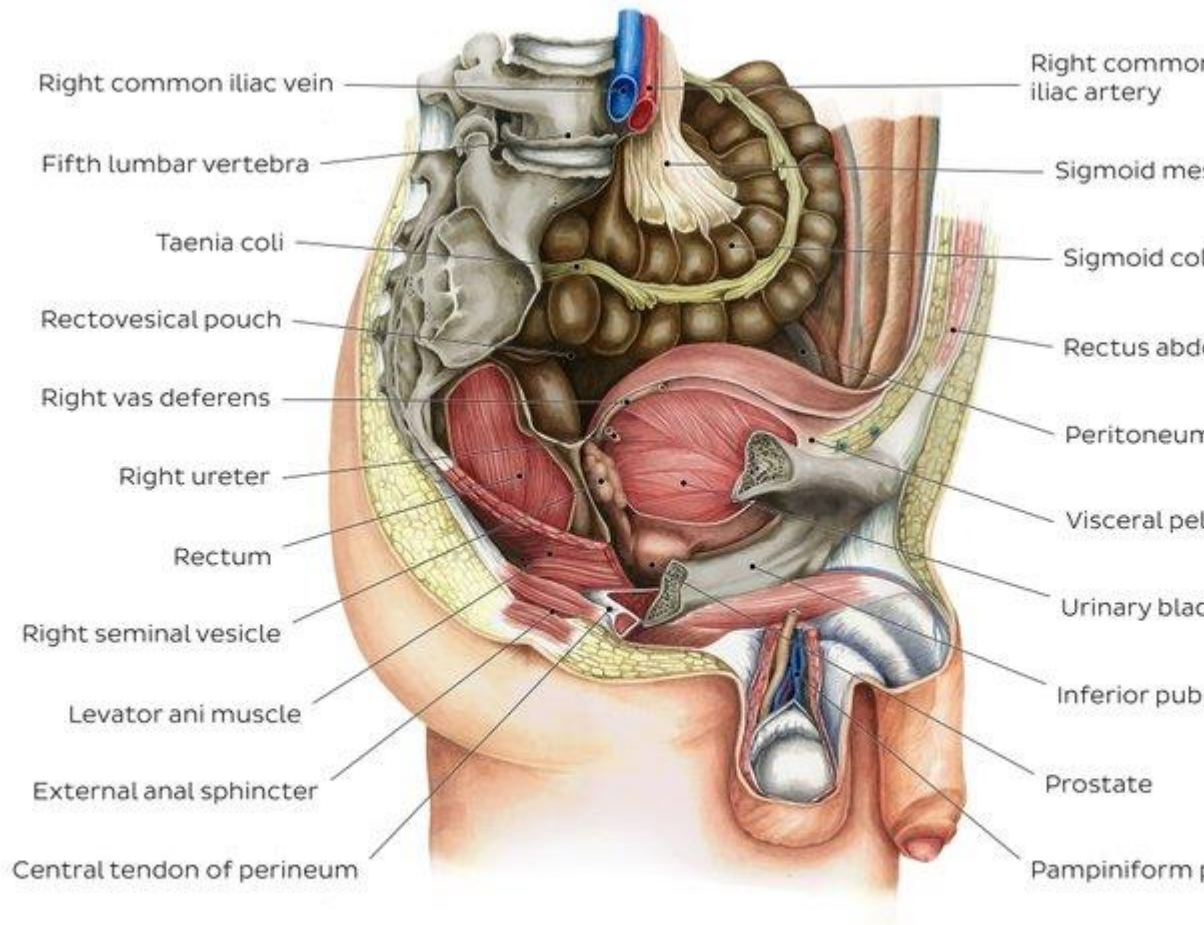


Uterus, uterine tubes and ovaries [Explore study unit](#)



Cervix, vagina and vulva [Explore study unit](#)

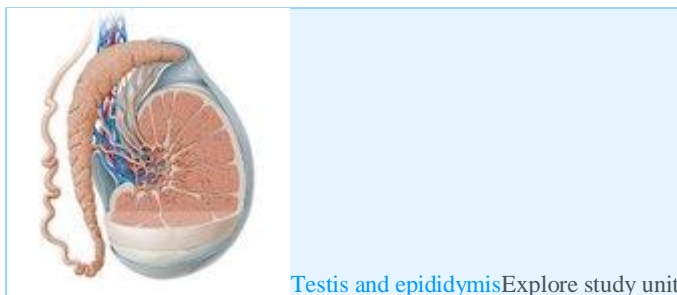
Male reproductive organs



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Male pelvis and perineum

Male reproductive anatomy also focuses on the internal and external male genitalia. The internal male genitalia are found within the greater pelvis and scrotum and includes the testes, epididymides, ductus deferentes, seminal glands, ejaculatory ducts, prostate and bulbourethral glands. The external genitalia is held by the perineum, and they are the distal urethra, scrotum and penis.



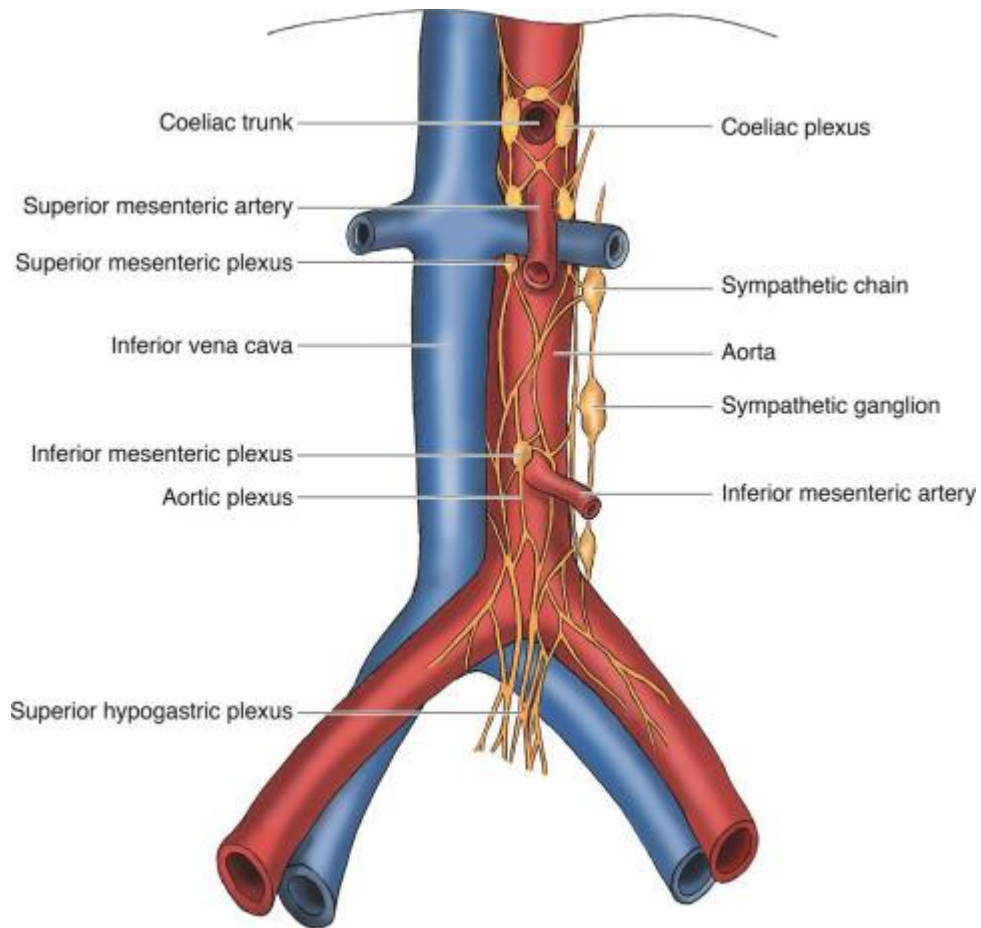
Testis and epididymis [Explore study unit](#)

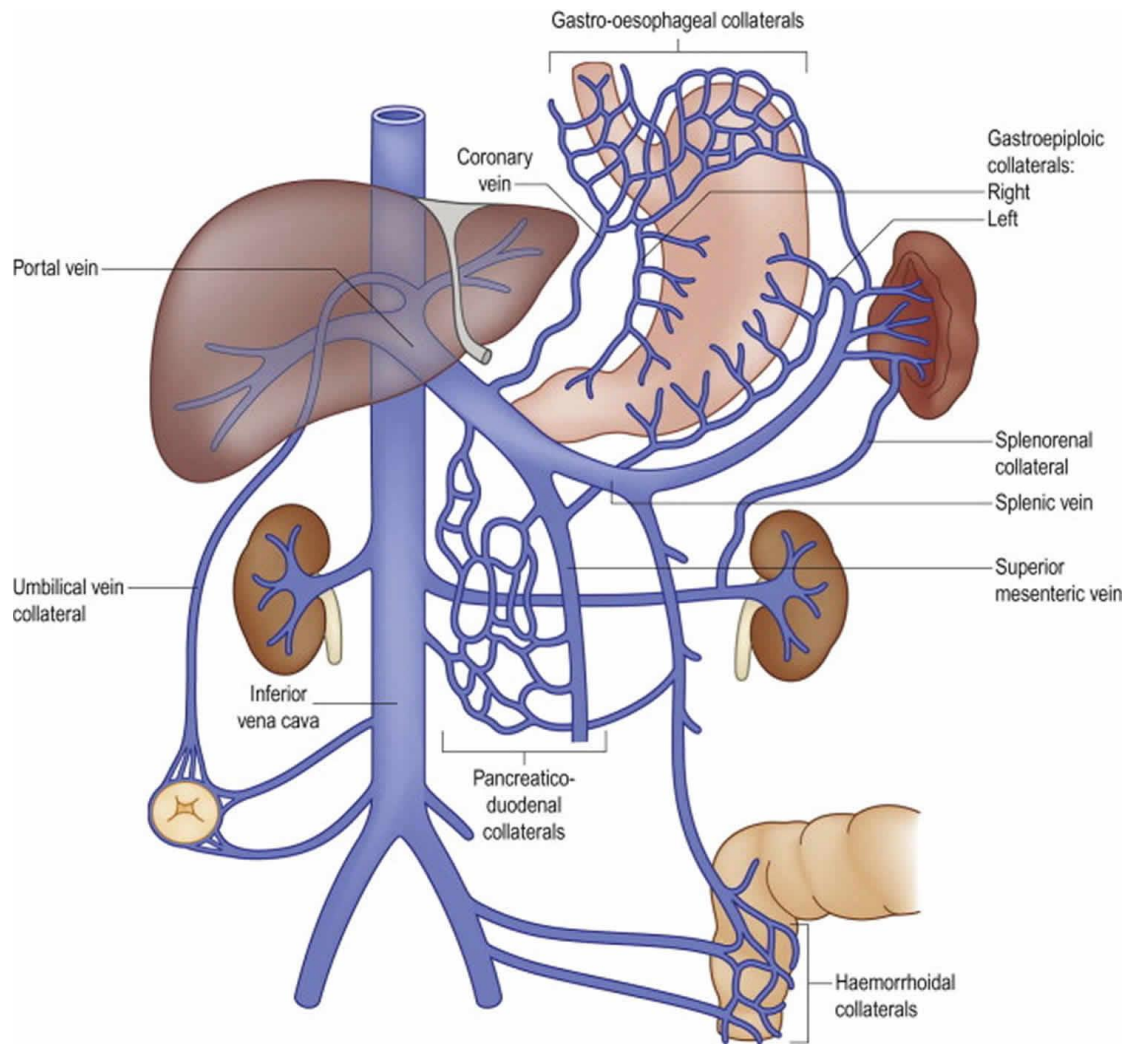
Blood vessels

The abdomen and pelvis are supplied by branches of the abdominal aorta. Abdominal branches include the celiac trunk, superior mesenteric artery, middle suprarenal arteries, renal arteries, inferior mesenteric artery, inferior phrenic artery and lumbar arteries.

Veins of the abdomen all converge to one major vessel – the inferior vena cava. Stomach, intestines, pancreas and spleen first drain into the hepatic portal vein which carries their blood to the liver. Eventually, the liver drains to the inferior vena cava through the hepatic veins.

Branches of the aorta that supply the pelvis are the internal iliac arteries, gonadal arteries (testicular and ovarian), median sacral artery and the superior rectal artery. Deoxygenated blood empties either into the inferior vena cava directly, or indirectly through the hepatic portal vein.





Innervation

The abdominal and pelvic organs are innervated by sympathetic and parasympathetic sources. Prevertebral ganglia and the lower thoracic and lumbar splanchnic nerves provide sympathetic input. They end within celiac, aorticorenal, superior and inferior mesenteric ganglia.

Parasympathetic supply comes from the vagus nerve (CN X), pelvic splanchnic nerves and paraaortic autonomic plexuses. Sympathetic and parasympathetic fibers make up several autonomic plexuses that innervate the abdominal viscera; myenteric, celiac, superior mesenteric, inferior mesenteric, superior hypogastric and inferior hypogastric plexuses.

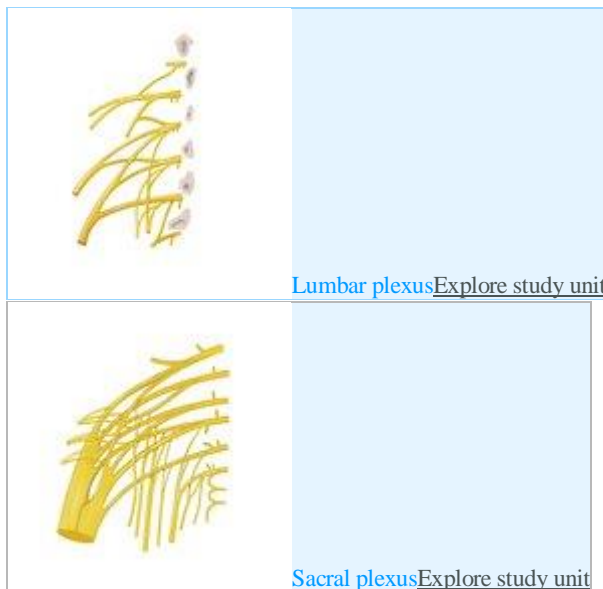
Vagus nerve

Nervus vagus

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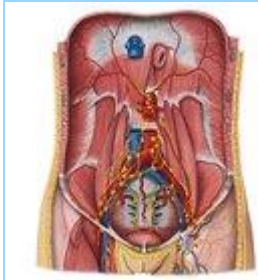
Synonyms: Cranial nerve X, CN X, show more...

Nerves of the pelvis include lumbosacral trunk (L4, L5), lumbar plexus (L1-L4), sacral plexus (L4-S4), coccygeal plexus (S4-Co) and autonomic pelvic nerves. Lumbar, sacral and coccygeal plexuses supply the pelvic walls and viscera, but also give numerous branches for the lower limb. Autonomic fibers are carried by the lumbar splanchnic, sacral splanchnic (sympathetic) and pelvic splanchnic (parasympathetic) nerves.

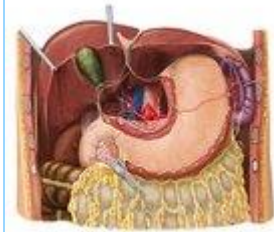


Lymphatics

The lymph of the abdomen and pelvis is collected to the system of regional lymph nodes, which all eventually empty into the thoracic lymph duct. Regional lymph nodes include left and right lumbar, superior and inferior mesenteric, iliac and inguinal lymph nodes.



Lymphatics of the posterior abdominal and pelvic wall [Explore study unit](#)



Lymphatics of the stomach, liver and gallbladder [Explore study unit](#)

Sources