

# The Acute Abdomen

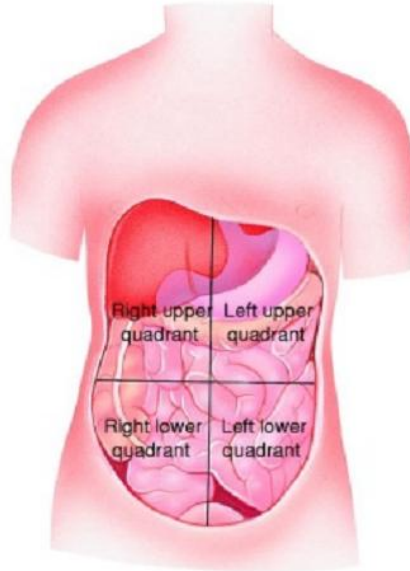
The abdomen can be divided into four quadrants by drawing one line across the abdomen through the umbilicus and one superior to inferior, again through the umbilicus. The areas defined are the right upper quadrant (**RUQ**), the left upper quadrant (**LUQ**), the right lower quadrant (**RLQ**), and the left lower quadrant (**LLQ**).

## RUQ

Liver  
gall bladder  
head of the pancreas  
part of the duodenum  
right kidney  
colon

## LUQ

Spleen  
tail of the pancreas  
Stomach  
left kidney  
Colon



LEFT UPPER QUADRANT

LEFT LOWER QUADRANT

RIGHT UPPER QUADRANT

RIGHT LOWER QUADRANT

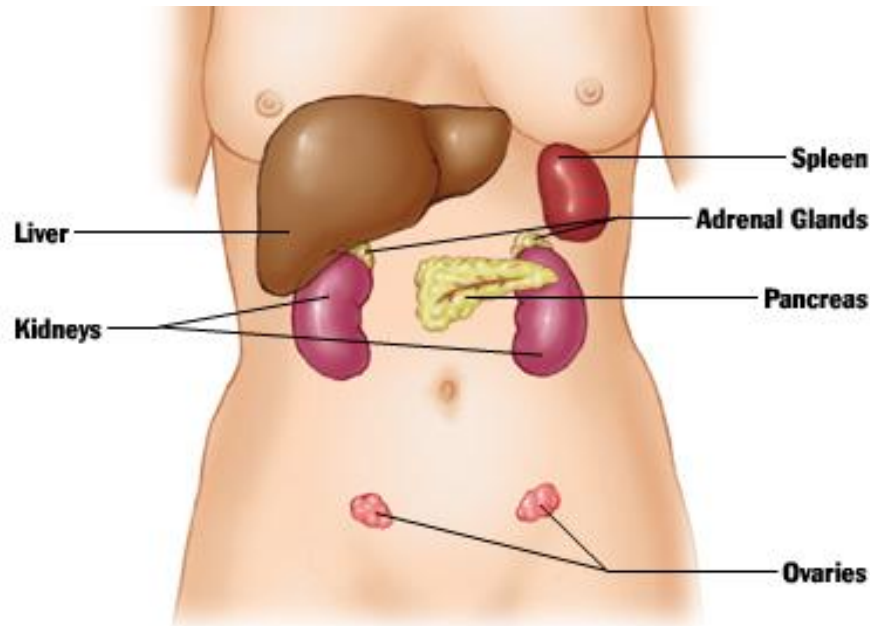
## RLQ

Appendix  
ascending colon  
small intestine  
right ovary  
right fallopian tube

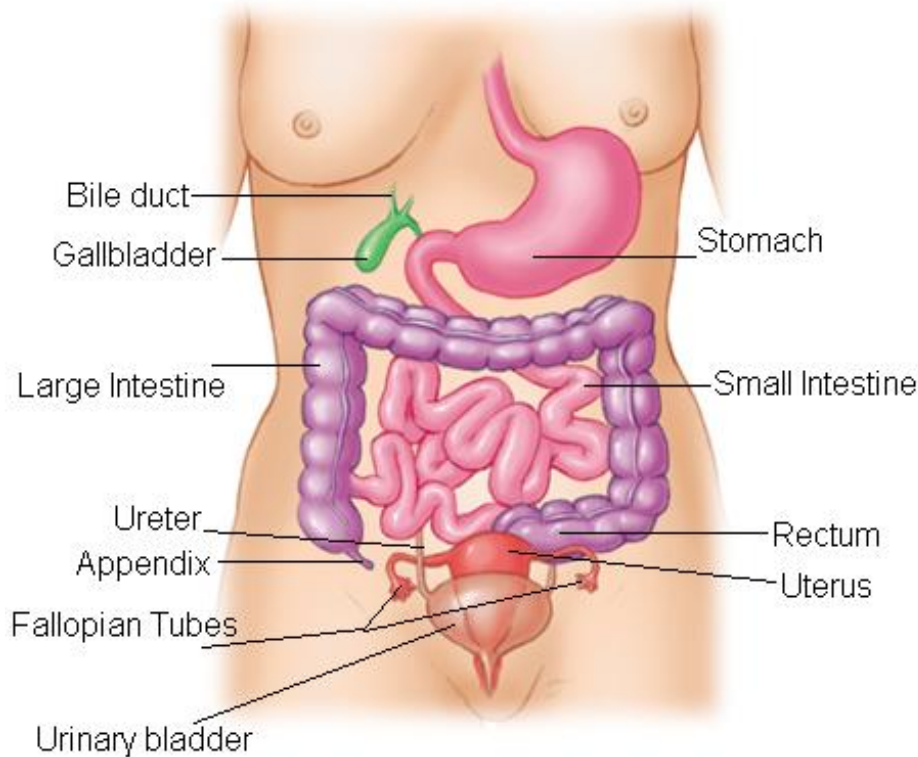
## LLQ

small intestine  
descending colon  
left ovary  
left fallopian tube

## SOLID ORGANS



# HOLLOW ORGANS



## **Borders of the Abdominal Cavity**

The abdominal cavity is bordered superiorly by the diaphragm, a domed sheath of muscle tissue, which moves dynamically with respirations. The lower border of the abdominal cavity is an imaginary plane over the pelvis, which separates the abdominal and pelvic cavities.

## **The Gastrointestinal System**

**Oral Cavity-** the oral cavity contains the teeth, tongue, gums, lips and cheeks. It begins the digestive process by physically breaking down the food and mixing it with the first digestive secretion, amylase.

**Esophagus-**the esophagus is a hollow, muscular tube designed to transport food from the mouth to the stomach.

**Stomach-**the stomach is a hollow, muscular organ, which physically mixes the digesting food. It also subjects the food to its secretions, including hydrochloric acid.

**Small intestines-**the small intestines is intended to continue the digestive process and to absorb nutrients. The small intestine is divided into three subdivisions. They are the duodenum, the jejunum, and the ileum.

**Large intestines**-the digesting food enters the large intestines as the final stage of digestion. Here water is released and absorbed from the "digesting matter". As with the small intestine, the large intestine is also divided into three sections, the cecum, the colon, and the rectum.

**Liver**-the liver is the largest of the solid organs. It secretes bile to assist in fat digestion, produces proteins, detoxifies many substances, and stores glycogen (a form of sugar).

**Pancreas**-the pancreas is responsible for the production of some digestive enzymes as well as insulin, glucagons and somastatin.

**Appendix**-the appendix is a blind narrow pocket of the cecum. It has no known function.

## The Genitourinary System

**Kidneys**-the kidneys are paired organs located within the retroperitoneal space. They filter blood and concentrate waste products as urine. They are also responsible for assisting in blood pressure regulation and maintaining fluid and electrolyte balance.

**Ureters**-the ureters, which are also retroperitoneal, extend from each kidney to the bladder.

**Urinary bladder**-the urinary bladder is located within the pelvic cavity and is responsible for the collection of urine.

**Urethra**-the urethra is a tube extending from the bladder to the outside. It is considerably **shorter** in the female than the male.

## The Male and Female Reproductive System

### MALE

**Testes**- the male gonads are the testes. They are responsible for producing sperm and the male hormones.

**Epididymis**- the epididymis is a small appendage located on each testis. They collect and store sperm

**Prostate**- the prostate is a small gland located where the male ureter exits the bladder. It provides the fluid medium for the sperm.

**Vas deferens**- the vas deferens are small muscular tubes which transport sperm from the testes to the ureter.

**Penis**-the penis is the male organ of copulation.

### FEMALE

**Ovaries**- the ovaries are the female gonads and are small, walnut sized structures, located in the abdominal and abdominopelvic cavity. They are responsible for ovum production and some of the female hormones.

**Fallopian tubes-** the fallopian tubes are hollow tubes connecting the abdominal cavity with the uterus. The fallopian tube's distal opening is in the proximity of the ovary.

**Uterus-** the uterus is a hollow muscular organ located in the lower pelvis. During pregnancy it will enlarge to accommodate the developing fetus and expel it at term.

**Vagina-** the vagina is the female organ of copulation; it extends from the outside to the uterus and serves as the birth canal.

### **Major Abdominal Blood Vessels**

- **Abdominal aorta**
- **Inferior vena cava**

### **Non-Hemorrhagic causes of abdominal pain**

**Peptic ulcer disease-** is caused by erosions (ulcers) on the lining of the esophagus, stomach or duodenum. It may be caused by excess secretion of stomach acid or the breakdown of the digestive system lining by drugs, alcohol or other agents. The pain is usually epigastric in the left upper quadrant and will frequently improve with eating or antacids.

**Appendicitis-** is an inflammation of the appendix due to obstruction or other cause. The onset of pain is abrupt, usually begins around the umbilicus, and migrates to the right lower quadrant. It is often associated with nausea vomiting, fever and anorexia.

**Diverticulitis-** diverticuli are pouches in the large intestine, which develop with age. They become inflamed in much the same manner as the appendix, though symptoms are usually left sided.

**Kidney stones-** is crystallized salts, which obstruct the ureter as they pass. Their passage is quite painful and colicky in nature. It will start in the upper back and move lower as the stone moves. The pain of kidney stones can be excruciating. Kidney stones passage is facilitated with IV fluids and pain medication.

**Pelvis inflammatory disease-** PID is a sexually transmitted disease, an infection of the upper genital tract, can affect the uterus, ovaries, fallopian tubes, can cause scarring and lead to infertility, tubal pregnancy, or other serious complications. Symptoms are lower abdominal pain, abnormal vaginal discharge, painful intercourse, irregular menstrual bleeding or may not have any symptoms at all.

**Pancreatitis-** is an inflammation of the pancreas. It is frequently associated with alcohol abuse, elevated blood cholesterol or triglycerides, or unknown causes. The pain begins abruptly in the central abdomen then radiates to the back and shoulders. It is often accompanied by nausea and vomiting, and is cared for with fluid, pain medications and nasogastric tube placement.

**Cholecystitis-** an inflammation of the gall bladder, which is frequently associated with a stone lodging in the bile duct. If the obstruction is severe, it may cause liver congestion and possibly Pancreatitis. The pain is located in the right upper quadrant and will increase with ingestion of fatty foods. Treatment is commonly removal of the gall bladder.

**Pyelonephritis-** is an infection of the kidney, which originated in the bladder. The patient will present with fever and lower back pain. Care normally involves administration of IV fluids.

**Ovarian cyst-** is a fluid filled sac located in the ovary, which may, occasionally cause pain.

**Hepatitis-**is an inflammation of the liver, which may be the result of infection, or alcohol or other substance abuse. It normally presents with dull right quadrant pain and upper abdominal tenderness. It may be accompanied, by anorexia, malaise, clay colored stool, and jaundice.

### **Hemorrhagic Causes of Acute Abdominal Pain**

**Esophageal varices-** are swollen veins in the lower third of the esophagus. They occur Secondary to portal hypertension, which may result from cirrhosis of the liver. The patient will often present with painless gastrointestinal bleeding/. The patient may may/will vomit large quantities of blood.

**Perforated abdominal viscus-**most commonly the stomach or duodenum may result in gastrointestinal contents released into the abdominal cavity. This will result in inflammation and infection of the peritoneum or other abdominal structures. The patient will experience sudden onset and generalized tenderness. Rebound tenderness is often present. The patient frequently requires emergency surgery

**Diverticulosis-** is bleeding from diverticulum if the large intestine. It results in painless rectal bleeding and possible left-sided pain. Care focuses on shock prevention.

**Carcinoma of the colon-** is a malignant growth anywhere in the colon. It may present with painless recta] bleeding, weight loss, or abdominal pain. Care is focuses on shock prevention.

**Ectopic pregnancy-** is the implantation of a developing fetus on other than the uterine wall. The fetus grows until the location of implantation can no longer support the development. Bleeding will occur as may lower abdominal pain, and the signs and symptoms of shock. The patient may or may not provide a history of missed period or experience vaginal hemorrhage.

**Aortic aneurysm-** is a bulging of the abdominal aorta, which threatens to rupture. The patient. Who is usually older, complains of diffuse abdominal pain and may complain of a tearing sensation in their back. A pulsating mass may or may not be present.

**Upper gastrointestinal hemorrhage- (hematemesis)-**

- Bright red blood is representative of fresh bleeding
- Coffee grounds colored emesis is representative of older bleeding

**Lower gastrointestinal hemorrhage- (rectal bleeding)**

- Bright red discharge is representative of low bowel hemorrhage
- Wine colored discharge is representative of colon or rapid Upper GI bleed
- Black colored discharge (melena) representative of upper GI bleed.
- Management/Care of Acute Abdominal pain
- Support ABC's
- Keep supine/Fetal position
- Position of Comfort
- Monitor vitals closely
- High flow Oxygen
- Rapid Smooth transport
- Consider calling ALS
- Keep Warm
- Treat for shock/PSAG/MAST
- Consider a trauma center
- Give the patient nothing by mouth/NPO

