



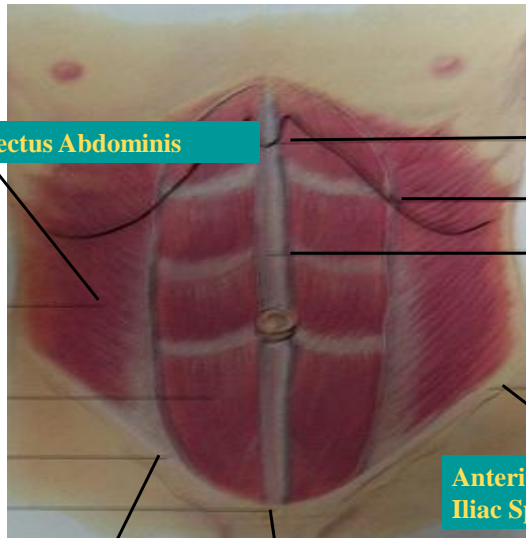
# Examination of the Abdomen

## Chapter 10

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### Review Anatomy



Rectus Abdominis

Xiphoid Process

Costal Margin

Linea Alba

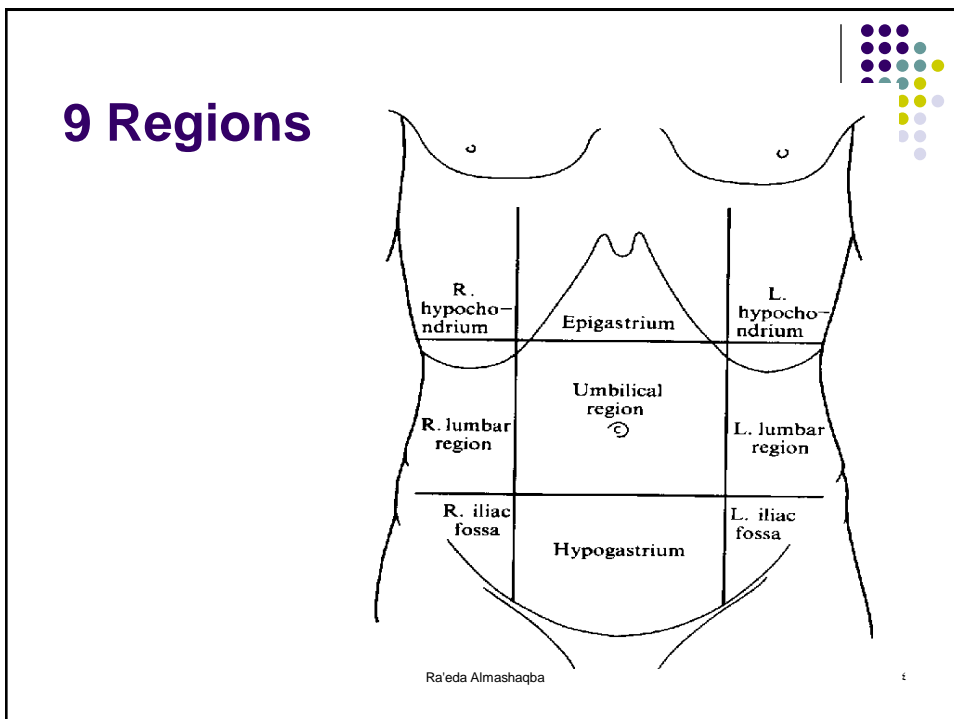
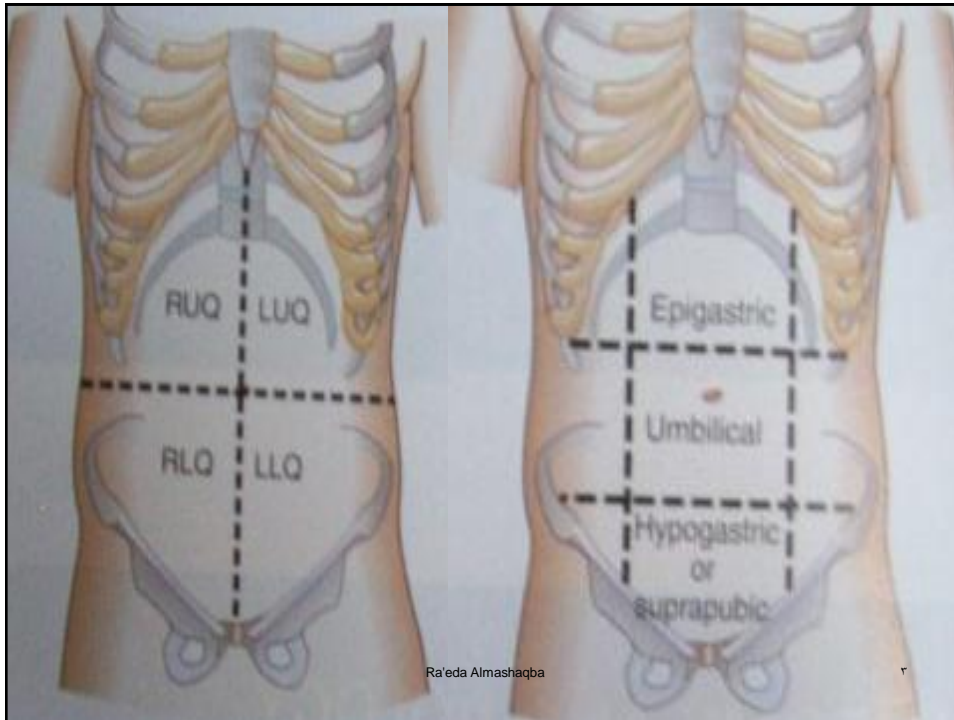
Anterior Superior Iliac Spine

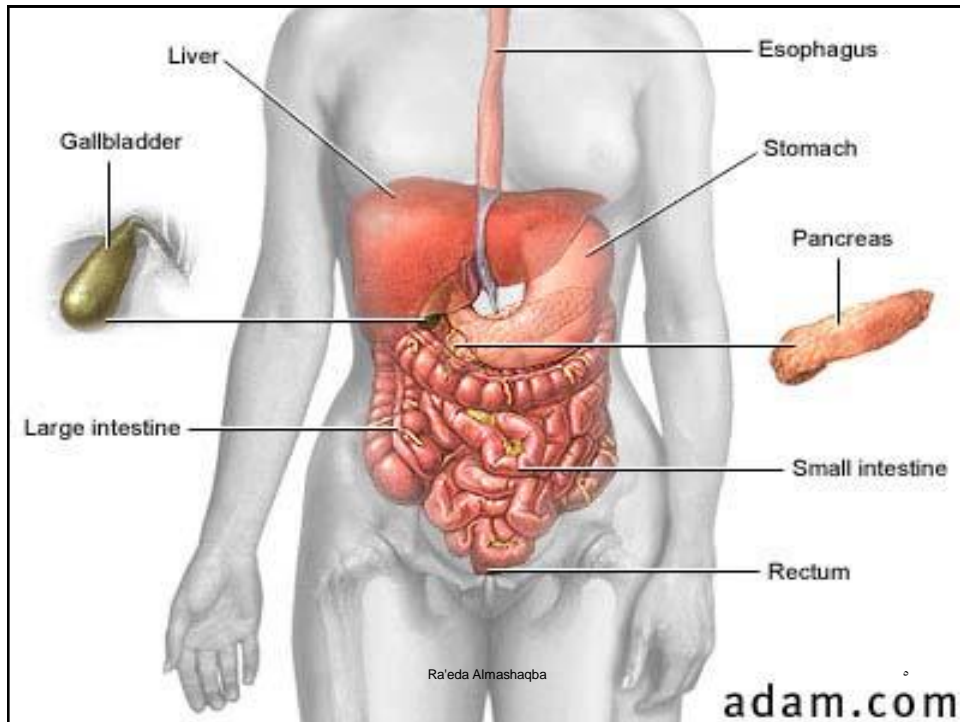
Symphysis Pubis

Inguinal Ligament

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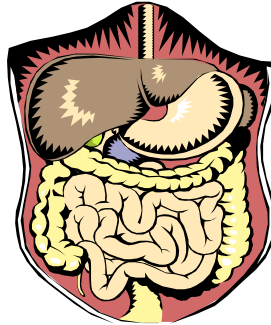
Right Upper Quadrant (RUQ)	Left Upper Quadrant (LUQ)
Liver	Stomach
Gallbladder	Spleen
Duodenum	Left lobe of liver
Head of pancreas	Body of pancreas
Right kidney and adrenal	Left kidney and adrenal
Hepatic flexure of colon	Splenic flexure of colon
Part of ascending and transverse colon	Part of transverse and descending colon
Right Lower Quadrant (RLQ)	Left Lower Quadrant (LLQ)
Cecum	Part of descending colon
Appendix	Sigmoid colon
Right ovary and tube	Left ovary and tube
Right ureter	Left ureter
Right spermatic cord	Left spermatic cord
Midline	
Aorta	
Uterus (if distended)	
Bladder (if distended)	



## Location! Location! Location!

- **RUQ**

- liver
- gallbladder
- duodenum (small intestine)
- pancreas head
- right kidney and adrenal



## Location! Location! Location!

- **RLQ**

- cecum
- appendix
- right ovary and tube



## Location! Location! Location!

### LLQ

sigmoid colon  
left ovary and tube

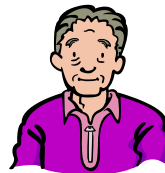
### LUQ

stomach  
spleen  
pancreas  
left kidney and adrenal



## GI Variations Due to Age

- Aging- should not affect GI function unless associated with a disease process
- Decreased: salivation, sense of taste, gastric acid secretion, esophageal emptying, liver size, bacterial flora
- Increased: constipation!



## Health History



### Gastrointestinal Disorder

- Indigestion, N&V, Anorexia, Hematemesis
- Ask the pt how is your appetite

Indigestion ----- distress associated with eating

Heartburn ---- sense of burning or warmth that is retrosternal and may radiate to the neck

Excessive gas: frequent belching, distention or flatulence ,Abd fullness.

- Dysphagia & odynophagia
- Change in bowel function
- Constipation or diarrhea
- Jaundice

### ● Abdominal pain:

#### Visceral :

Occur in all the abd, burning, aching, difficult to localize, varies in quality

e.g. pain in RUQ from liver distention

#### Parietal pain:

In parietal peritoneum, caused by inflammation, steady, more sever, localized, increase by movement or coughing

#### Referred pain:

felt at more distant site, well localized,



### Urinary Tract Disorder:

- Ask about difficulty in passing urine? --- **dysuria**
- How often do you go to bathroom?---- **frequency**
- Do you have to get up at night ?----- **nocturia**
- How often?
- How much urine do you pass at a time? --- **polyuria**
- Do you ever get problem getting to the toilet on time?
- Do you have any problem in holding urine?- **incontinence**
- Do you have any problem in initiating urination? -**hesitancy**
- Do you have notice any change in urine color? -- **hematuria**
- Assess for kidney or flank pain, uretral pain

- Bowel Habits
- Past Abdominal History
- Medications
  - Aspirin
  - smoking
- Nutritional Assessment
  - 24 hour recall
  - Nutritional patterns
  - Weight change
- Exercise patterns

### Steps for Enhancing Examination of the Abdomen

- The patient should have an empty bladder.
- Make the patient comfortable in a supine position, with a pillow for the head and perhaps another under the knees. Slide your hand under the low back to see if the patient is relaxed and flat on the table.
- Have the patient keep arms at the sides or folded across the chest. Often patients raise their arms over their heads, but this stretches and tightens the abdominal wall, making palpation difficult.
- Before you begin palpation, ask the patient to point to any areas of pain and examine these areas last.
- Warm your hands and stethoscope, and avoid long fingernails. You may need to rub your hands together or warm them up with hot water; you can also begin palpation through the patient's gown to absorb warmth from the patient's body before exposing the abdomen properly. Anxiety may make the hands cool, a problem that decreases over time.
- Approach slowly and avoid quick unexpected movements. Watch the patient's face closely for any signs of pain or discomfort.
- Distract the patient if necessary with conversation or questions. If the patient is frightened or ticklish, begin palpation with the patient's hand under yours. After a few moments, your hand underneath to palpate directly.

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## Techniques for Exam



- Provide privacy.
- Good lighting/appropriate temp room
- Expose the abdomen.
- Empty bladder.
- Position pt supine, arms by side & head on pillow with knees slightly bent or on a pillow.
- Warm stethoscope & hands.
- Painful areas last.
- Distraction techniques.

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## Technique of examination



- Inspection

Start from Rt side, note:




- **Skin** ( scars, striae, dilated vein, rashes, lesions)
  - Scars ( describe them, or diagram location)
  - striae ( pink- purple with Cushing's syndrome)
  - Coetaneous angiomas (spider nevi) occur with portal hypertension or liver disease
  - Prominent dilated veins with portal hypertension, liver cirrhosis, or inferior vena cava obstruction

- **Umbilicus:**

- Contour
- location
- any inflammation, or bulge)


Abnormalities:

- Everted
- Sunken
- Enlarged
- Bluish color




- **Contour**
  - Normally range from flat to rounded
  - Abnormalities include protuberant or scaphoid, bulge in flank area
- **Symmetry**
  - Abnormalities: bulges, masses, Hernia (protrusion of abd viscera through abnormal opening in muscle wall)
- **Pulsation or movements( peristalsis)**
  - Normally: aortic pulsation and peristalsis movements may be seen in thin persons
  - Abnormalities:  
Increased pulsation ----- aortic aneurysm  
Increased peristalsis ----- intestinal obstruction

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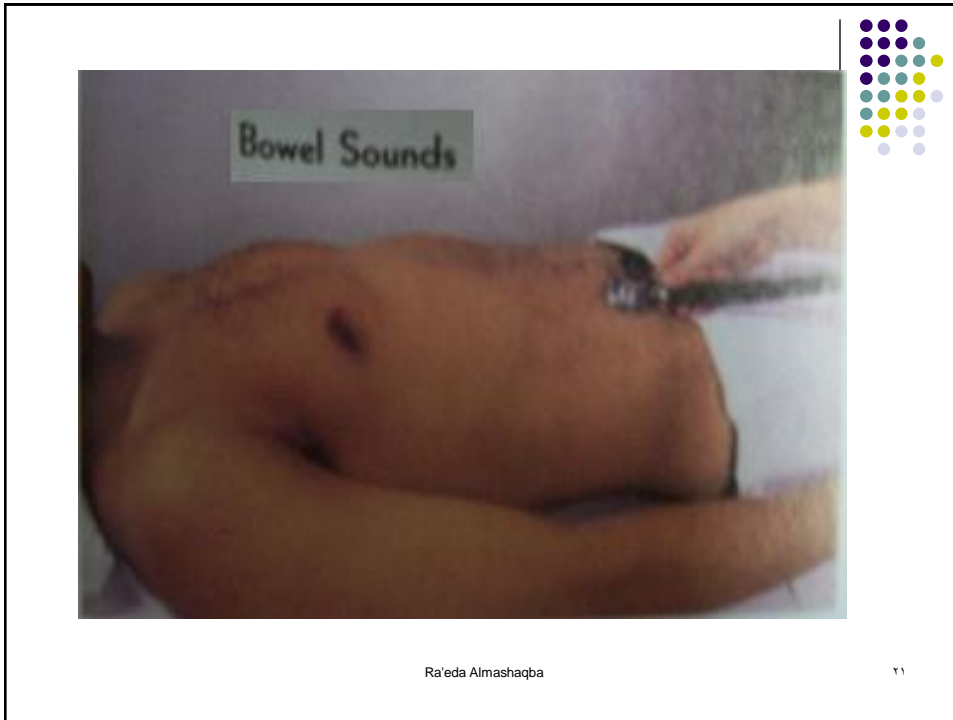


## Auscultation

- Always done before percussion & palpation
- Use diaphragm of stethoscope
- Listen lightly
- Start with RLQ

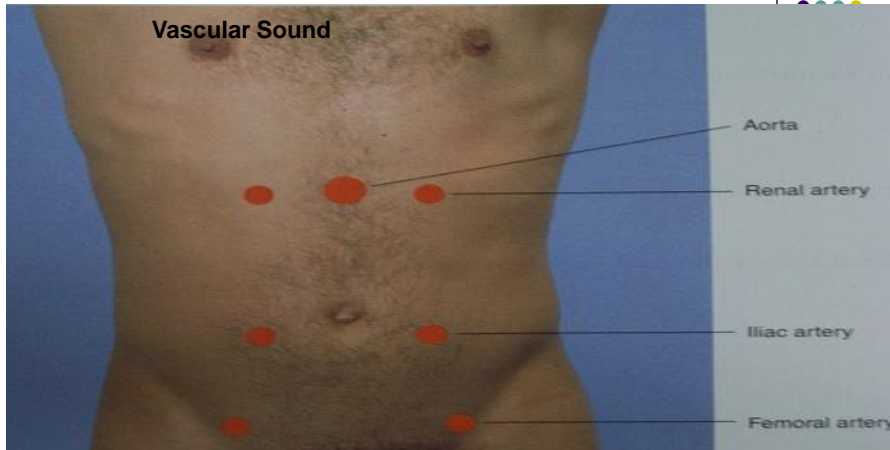


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- In Auscultation for bowel sound note frequency and characteristics
  - Normally: high pitched, gurgling, flowing sound, irregular 5-34/min
  - Hyper active: loud, high-pitch, rushing; i.e. stomach growling (borborygmus)
  - Hypoactive or absent: following abd Surgery; listen for 5 minutes before decide a complete silent abd.
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## Auscultation of the Abdomen



**listen for Bruits (venous hum) over aorta, renal artery, iliac artery, and femoral artery**  
**listen for friction rub over liver and spleen**  
**Note: location, pitch, & timing ( with systolic or diastolic) of any abnormal sound**

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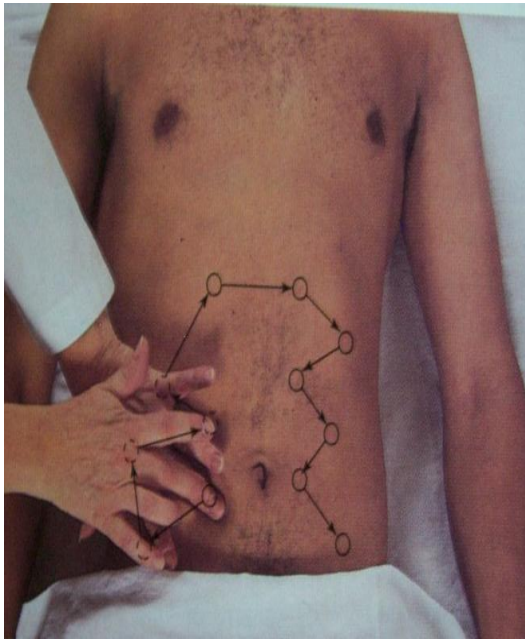
## Percussion



- Gently tapping on the skin to create a vibration
- Detect fluid, gaseous distention and masses
- Tympany- gas (dominant sound because of air in sm intestine)
- Dullness- solid masses, distended bladder
- Percuss liver, spleen ,kidneys

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- Percuss in the 4 quadrant
- Note tympany over gas filled
- Dullness over fluid filled tissue

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- Percuss the lower anterior chest between lungs above and costal margin below ( on the Rt - -- dullness over the liver on the Lt ---- tympany overlies the gastric air bubble and splenic flexure of the colon

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## Palpating the Abdomen



- **Light Palpation**

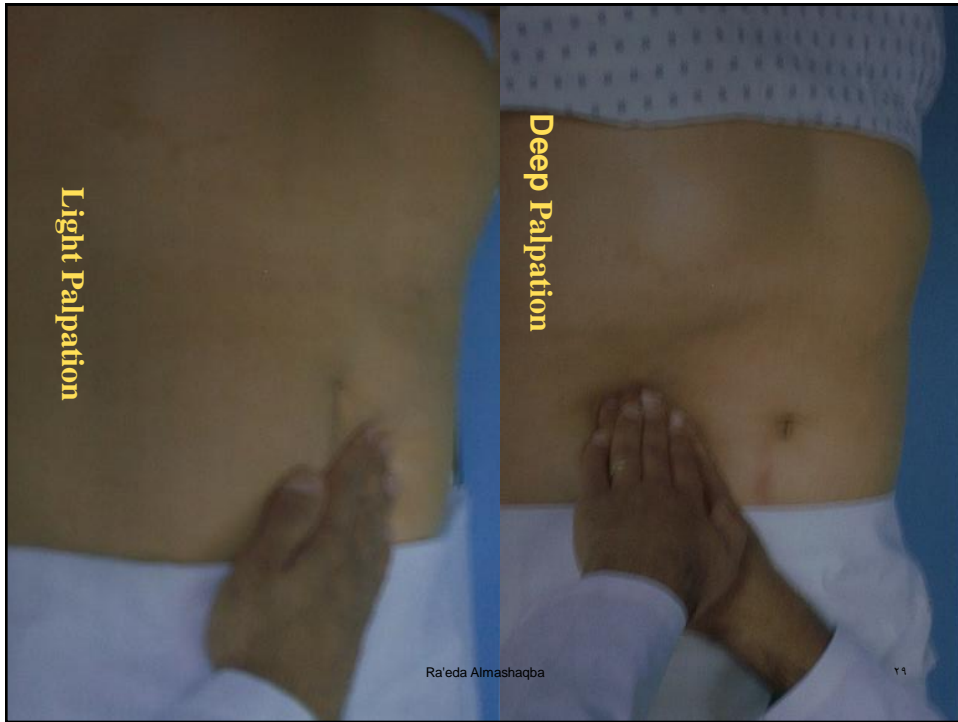
- Do not drag fingers, lift them instead
- Normal finding: voluntary muscle guarding occurs when patient is cold or ticklish especially during exhalation
- **Abnormal:**
  - Involuntary rigidity: a constant board like hardness of muscles not relieved with exhalation; occur due to acute pain such in peritonitis.
  - Rigidity, large masses, tenderness

## Palpating the Abdomen



- **Deep palpation**

- Push down about 5-8 cm clockwise
- Use palmar surface of your fingers
- Id any mass and look for their location, size, shape, consistency, tenderness, and any mobility with respiration or with examining hand
- Normally, mild tenderness may occur when palpate sigmoid colon. Other than that No tenderness should be felt.



- **Assess for peritoneal inflammation:**

- Ask patient to cough determine where the cough produce pain
- Palpate gently with one finger to map area of tenderness

- Look for rebound tenderness

watch and listen to the pt for signs of pain

+ve if pain produced with quick withdrawal -----  
peritoneal inflammation

## The liver

- Liver assessed by percussion and palpation
- percussion ( to estimate size and shape)
- Palpation ( to evaluate its surface, consistency, and tenderness)

**Percussion:** to measure vertical span

- Identify the lower border of the liver by Percuss at the Rt MCL start from under the umbilicus (tympany) then move upward toward the liver (Dullness)
- Identify the upper border of the liver by Percuss at Rt MCL start from lung resonance down to liver dullness
- You can percuss at MSL
- Normal liver span ranges from 6-12cm at Rt MCL or 4-8cm at MSL and in male > female, tall > shorter
- Increase liver span in liver enlargements

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**Careful** consideration must be taken when percussing patients with emphysema, ascites, pregnancy, or colon gas distension as dullness may be pushed up.

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## Palpation:

- Place your Lt hand behind the pt to support 11<sup>th</sup>, 12<sup>th</sup> ribs
- place the fingertips of your Rt hand under the rib cage press in and up
- Ask pt to take deep breath, try to feel the edge of the liver, note any tenderness
- Normal liver edge if palpable is soft, sharp, regular, smooth



## ● Hooking technique:

- to palpate the liver especially when the pt is obese
- Stand to the Rt of the pt chest
  - Place both hands side by side
  - Press in with your fingers and up toward the costal margin
  - Ask the pt to take deep breath
  - Feel the liver edge





- **Assessing tenderness of the liver:**

- place your Lt hand flat on the lower Rt rib cage and then strike your hand with the ulnar surface of your Rt fist
- Ask the pt to compare the sensation with that produced by similar strike on the Lt side
- Tenderness over the liver suggest inflammation.

## The Spleen



- Percussion of the spleen can't confirm splenomegaly it confirmed by palpation

### Percussion:

Two techniques

1. percuss the Lt lower anterior chest wall:


from **9<sup>th</sup> ICS to 11<sup>th</sup> ICS** start from lung resonance above the AAL toward MAL ( **traube's space**) percuss along the routes, note the lateral extent of tympany

2. Check for a splenic percussion sign:

Percuss the lowest interspace in the Lt **AAL** (tympanic), then ask the pt to take deep breath and percuss again

It should remain tympanic


**+ve** splenic percussion sign ( change from tympany to dullness on inspiration , it may be **positive** when spleen size is normal



- **Palpation:**
  - With your Lt hand, reach over the pt to support the lower Lt rib cage
  - Place your Rt hand below the Lt costal margin, press your fingers in toward the spleen
  - Ask the pt to take deep breath
  - Feel tip of the spleen
  - Note any tenderness, assess splenic contour,
  - Repeat palpation with the pt lying on the Rt side with leg flexed at hips and knees

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## The Kidney

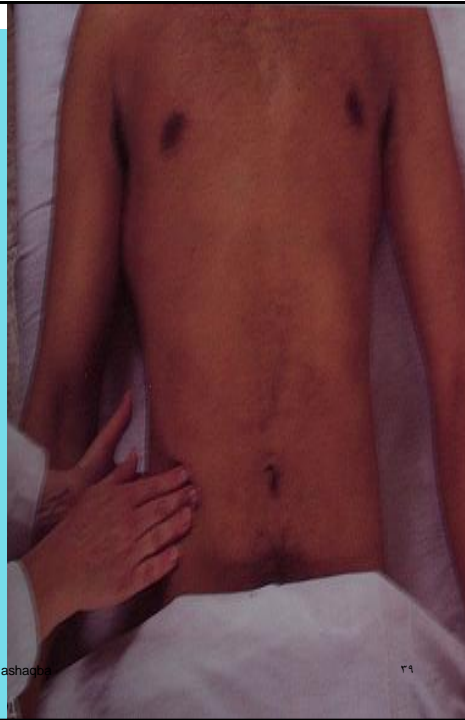


- **Palpation of the Lt kidney:**
  - place Rt hand behind the pt( below and parallel to the 12<sup>th</sup> rib, try to bring the Lt kidney anteriorly
  - place Lt hand in the LUQ
  - Ask Pt to take deep breath
  - At Peak of inspiration press your Lt hand firmly and deeply into the LUQ, below the costal margin
  - Try to capture the kidney
  - Then ask pt to exhale and stop breathing for a while
  - Slowly release the pressure of your Lt hand
  - Now feel for the kidney to slide back
  - If it is palpable describe ( size, contour, tenderness)
  - You may alternatively use the method similar to feeling for the spleen
  - Normal Lt kidney rarely palpable

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- **Palpation of the Rt kidney:**

- Return to the pt Rt side
- Place your Lt hand under the pt back, try to displace the kidney anteriorly
- Place your Rt hand at the RUQ under the costal angle
- Then proceed as examining Lt kidney
- Normal Rt kidney may be palpable, especially in thin, well relaxed women



- **Assessing kidney tenderness:**

- place the ball of one hand in the costovertebrall angle
- Strike with the ulnar surface of your fist
- Pain with pressure of percussion suggest of pyleonephritis

**Costovertebral Angel Tenderness (CVA)**



- **The Bladder:**

Not palpable unless it is distended above Symphysis pubis

By palpation distended bladder feel smooth and round

Check for tenderness

- **The Aorta:**

- press firmly deep in the upper abd, slightly to the Lt of the midline to assess the aortic pulsation ( by using your index and thumb)

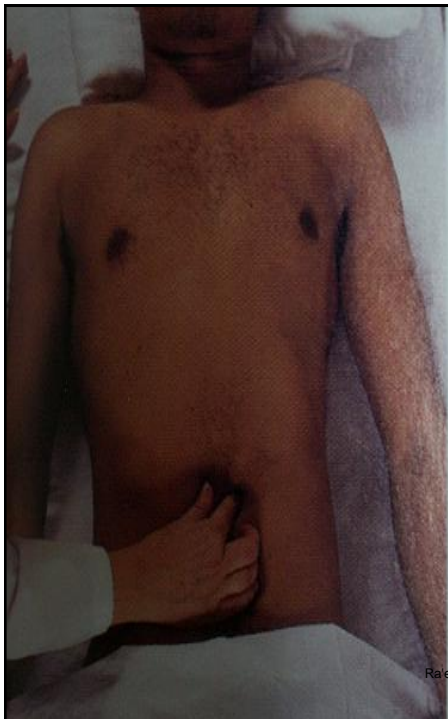
- In people >50y , assess the width of the aorta by placing one hand on each side of the aorta

- Normal aortic pulsation not more than 3cm ( average 2.5cm)

- Expansion of aortic pulsation suggest aortic aneurysm

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## Assessing possible ascites



- Map the border between tympany and dullness by percuss the abd out ward in several direction from the central area of tympany

### Then

#### Test for shifting dullness:

- after mapping the border, ask pt to turn to one side, then percuss and mark the borders again
- In ascites, dullness shift to the more dependant side, whereas tympany shift to the top

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#### ● Test for fluid wave :

- Ask the pt to press the edges of both hands firmly down the midline of the Abd  
( this helps to stop transmission of a wave through fat)
- Tap one flank sharply with your fingertips
- Feel for impulse transmission on the opposite flank
- Easily palpable impulses suggest ascites



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The top section, titled "Shifting Dullness", contains two images. The left image shows a patient's abdomen with a dashed semi-circle indicating a zone of "Dullness" and arrows pointing to "Tympany" areas. The right image shows a similar view with a shaded area of "Dullness" and arrows pointing to "Tympany" areas. The bottom section, titled "Fluid Wave", shows a photograph of a person's abdomen being palpated by two hands.

Shifting Dullness

Fluid Wave

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## Assessing for Appendicitis



- Ask the pt to point where the pain began and where it is now, then ask him to cough ask if the cough increase the pain
- Search an area of local tenderness  
tenderness in RLQ suggest appendicitis
- Feel for muscular rigidity
- Perform rectal examination in men and pelvic examination in female
- Additional techniques that are helpful:


- Rebound tenderness
- Rovsing's sign, and referred rebound tenderness

Pain in the RLQ during Lt sided pressure --- appendicitis  
( +ve Rovsing's sign)

Pain in the RLQ on quick withdrawal ( referred rebound tenderness) during Lt side pressure

- Psoas sign: place your hand above the pt Rt knee, ask the pt to raise his thigh against your hand
- Obturator sign: flex pt Rt thigh at the hip, with knee bent, then rotate the leg internally at the hip
- Coetaneous hyperesthesia: gently pick up a fold of skin between your thumb and index finger normally no pain should occur

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**Psoas sign**

A negative (Normal) Test is No Pain

**Obturator sign**

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## Assessing for possible Cholecystitis



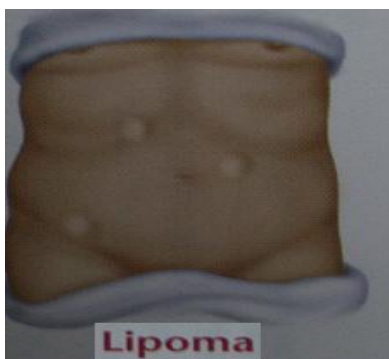
- Using Murphy's sign:
  - hook your fingers or thumb of your Rt hand under the costal margin
  - Ask the pt to take deep breath
  - If the pt unable to continue breathing due to pain indicate +ve Murphy's sign

## Assessing for ventral Hernia



- It is a hernia in the Abd wall
- If you suspect it but you do not see ask the pt to raise both head and shoulders off the table

# Common Abdominal Abnormalities



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