eLearning by Dr. M.G.R EDUCATIONAL AND RESEARCH INSTITUTE

Topic	:	**CT ABDOMEN PROTOCOL**
Subject Code	:	**BRI5T1**
Subject Name	:	**BASIC AND ADVANCED CT SCAN**
Delivered by	:	**Mr. VAYSHAK KV**

Dr. M.G.R

EDUCATIONAL AND RESEARCH INSTITUTE

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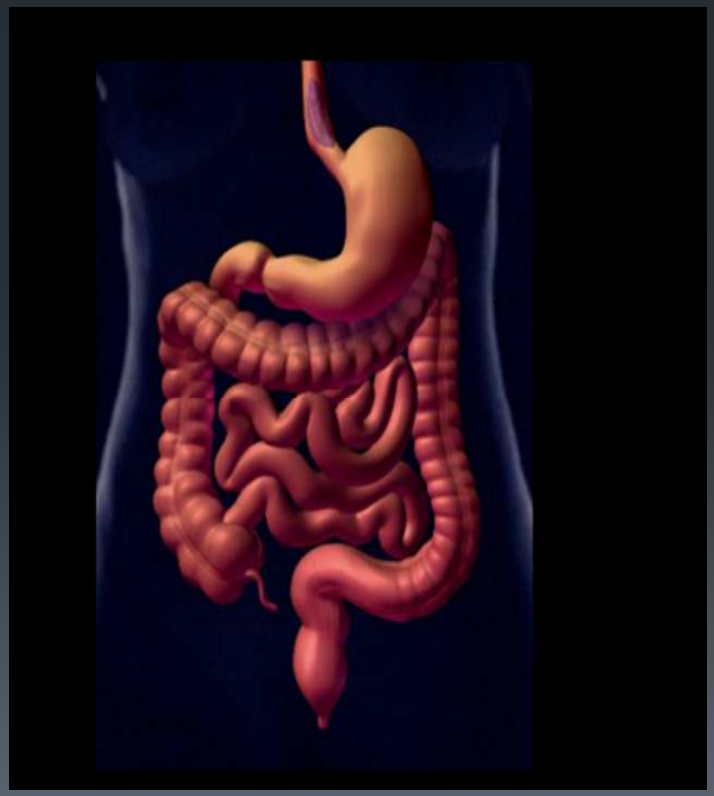
CT ABDOMEN IMAGING

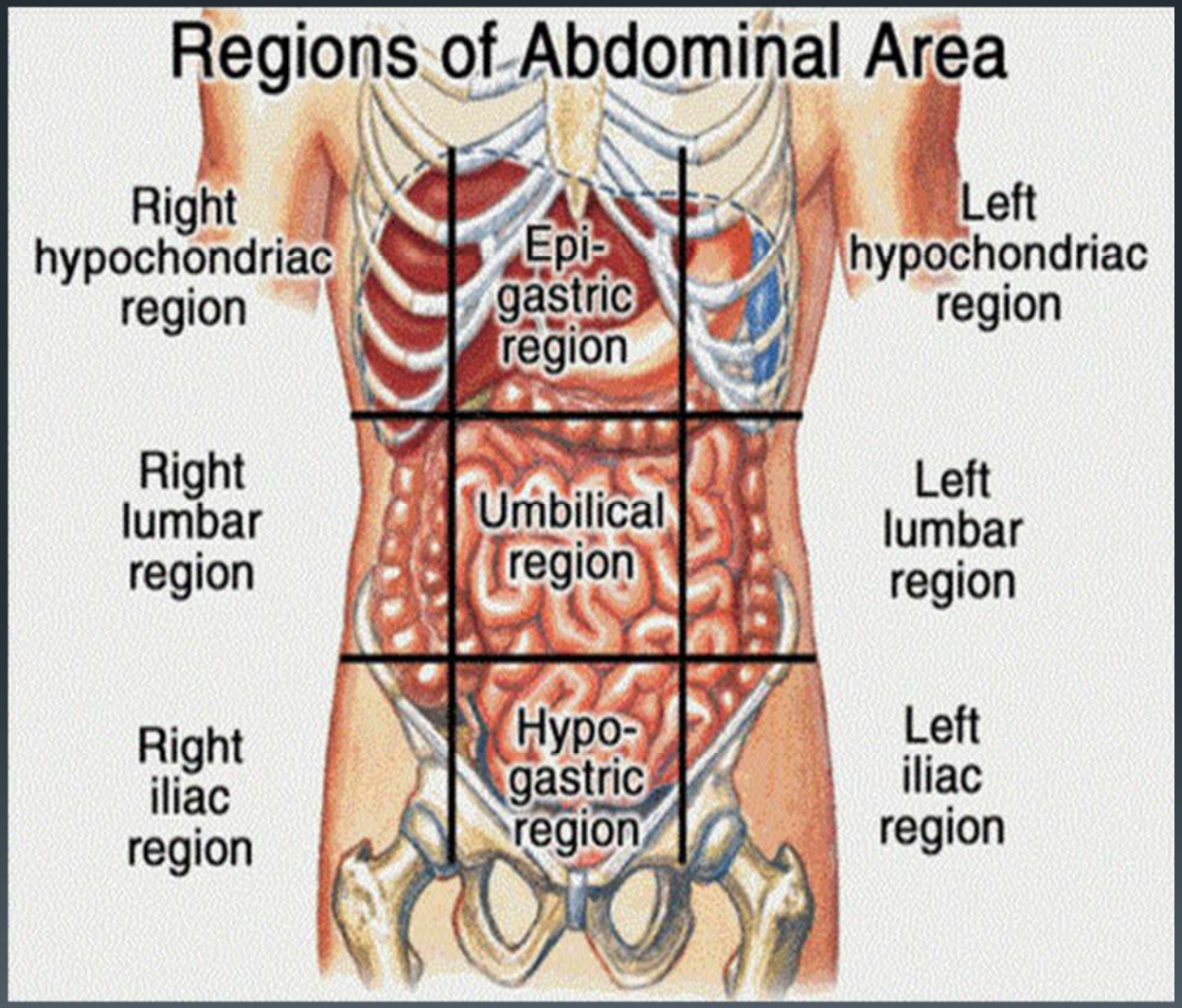
CT ABDOMEN

INTRODUCTION :

To visualize the cross sectional images of abdominal organs and its pathologies.



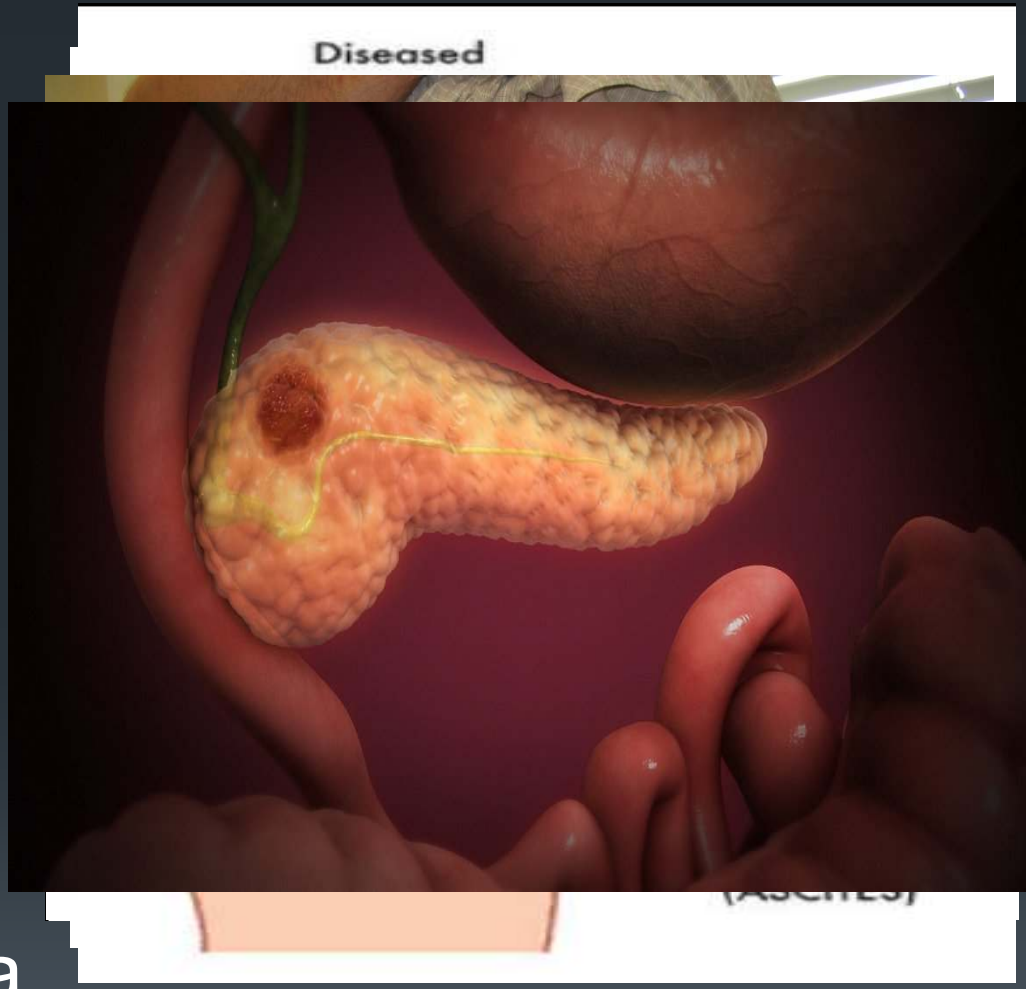
ANATOMY OF ABDOMEN



CT ABDOMEN

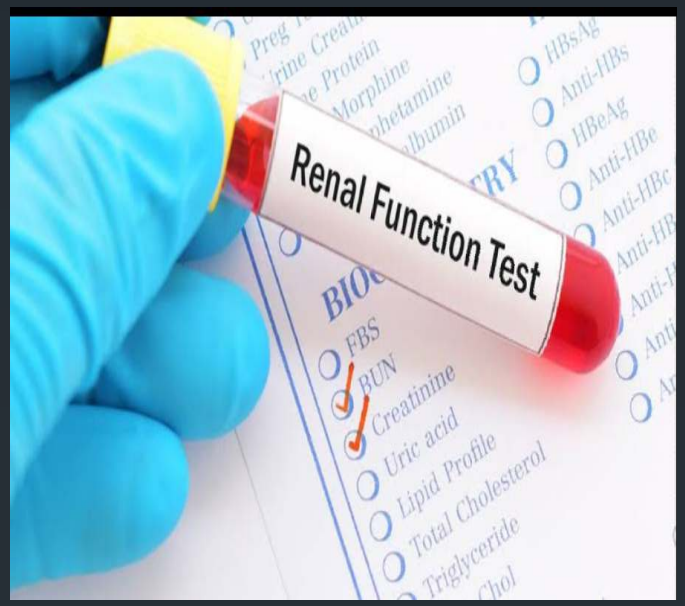
INDICATION

- Abdominal mass
- Abdominal pain
- Diarrhoea
- Tumour
- Intestinal obstruction
- Pancreatitis
- Appendicitis
- Ascites
- Injuries following trauma

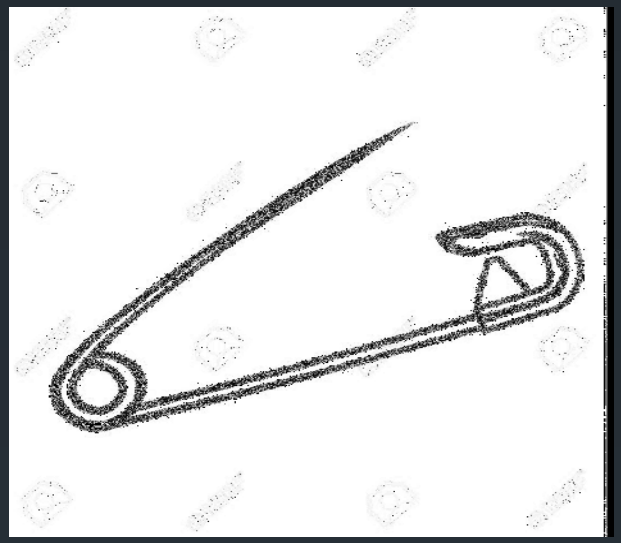


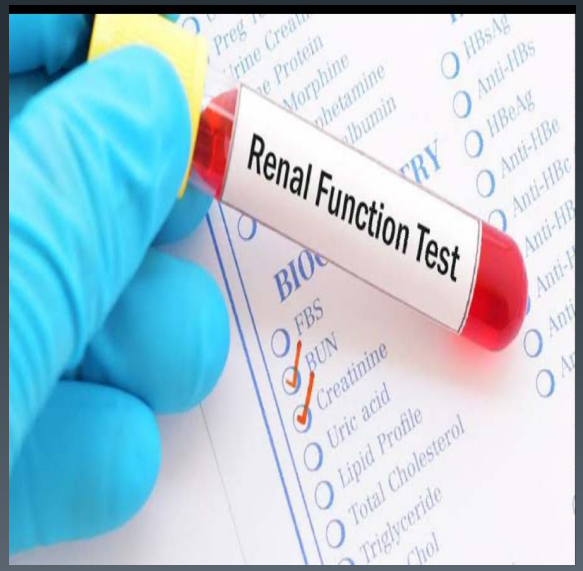
CONTRAINDICATION

- Elevated RFT values
- Allergic to contrast agent
- Pregnancy
- Renal failure



PATIENT PREPARATION





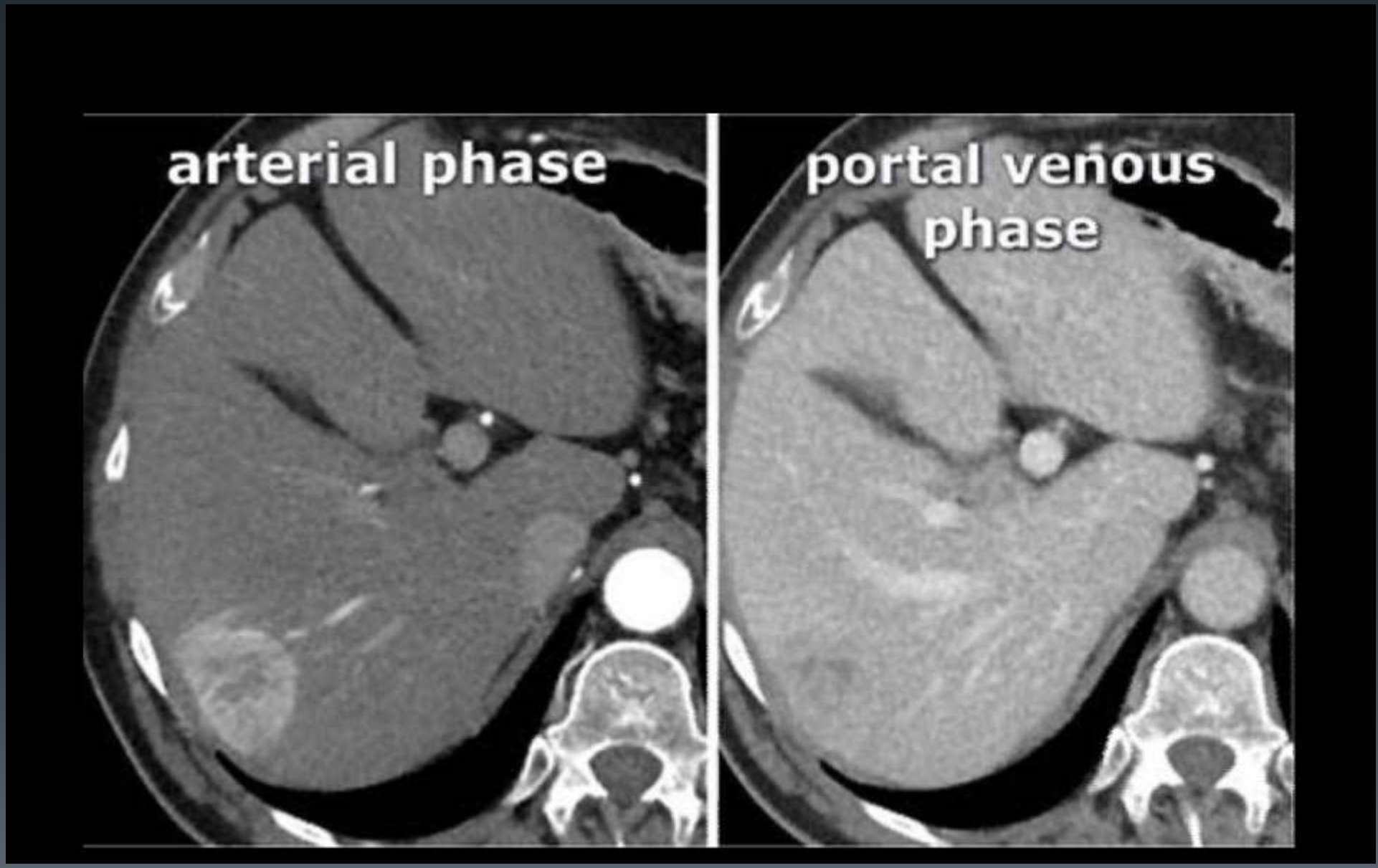
CONTRAST STUDY

- Indication for this examination is very important and is used to decide whether the examination is performed with oral, rectal or intravenous contast agent .

- **ORAL CONTRAST :** To demonstrate obstruction.
- **RECTAL CONTRAST :** To demonstrate a leak and the presence of fistula.
- **INTRAVENOUS CONTRAST :** For effective evaluation of arteries and veins.

ORAL CONTRAST RECTAL CONTRAST

INTRAVENOUS CONTRAST



CONTRAST MEDIUM

- **ORAL CONTRAST** : Barium or Gastrografin

Conditions such as perforated ulcer may indicate the use of Gastrografin.

Volume of contrast: 750-1000mL

- **RECTAL CONTRAST** : Barium or Gastrografin

Volume of contrast: 500-750mL

CONTRAST MEDIUM

- **INTRAVENOUS CONTRAST :** Non ionic contrast medium

  Iohexol (omnipaque) 350mgI/mL

  Volume of contrast : 60-80mL

  1.2mL /Kg of body weight

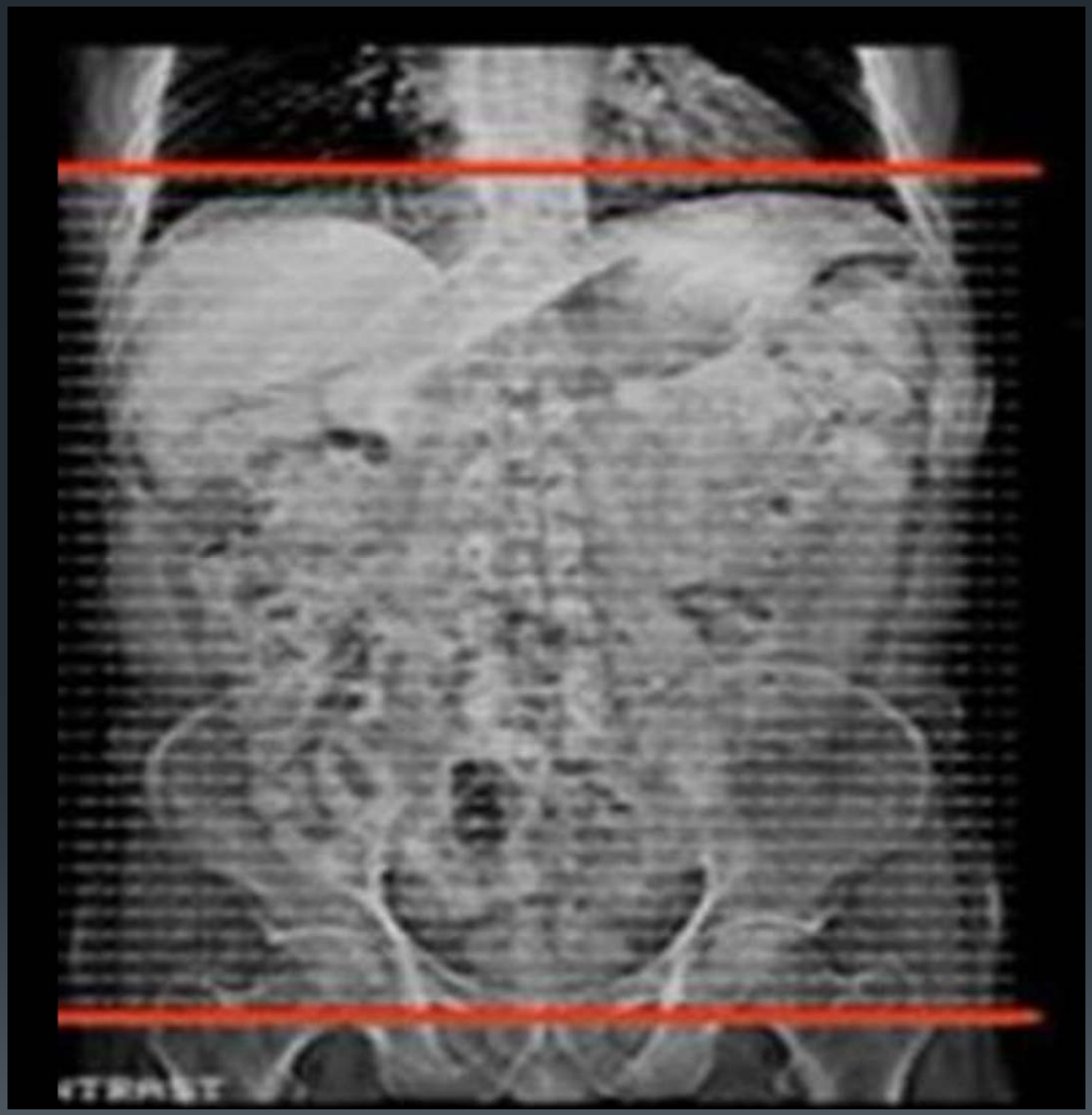
  Flow rate : 3-4mL /sec
- Patient preparation : RFT values – Creatinine 0.6 – 1.2 mg/dL
- 18 G venflon is used.
- IV line should be in anti cubital vein.
- Patency should be checked.

SCAN PLANNING

- **PATIENT POSITIONING :** Head first, Supine with Arms extended above the level of the Head.
- **ANATOMICAL REFERENCE :** Xiphisternum
- **TOPOGRAM POSITION :** Level of the nipples.
- **ORIENTATION :** Craniocaudal
- **PLANNING :**

1cm above the dome of diaphragm and below the inferior border of pubic symphysis.

- **FIELD OF VIEW :** Including the soft tissue.



SEQUENCES

TOPOGRAM → PLAIN → CONTRAST

BOLUS TRACKING : It is a technique used to visualize the blood vessels more clearly by injecting the contrast medium.

- Volume of the contrast is tracked using a region of interest (ROI) at certain level and then scan followed once it reaches this level.
- **ROI : Descending Aorta**

SCAN PHASES

SCAN PHASES :

1. Arterial phase
2. Venous phase
3. Nephrogenic phase
4. Delayed phase

PHASE	TIME	EVALUATION
ARTERIAL PHASE	15-20 sec	Hypervascular abnormalities
VENOUS PHASE	60-80 sec	Abdominal abnormalities Hypovascular liver metastases
NEPHROGENIC PHASE	80-100 sec	Kidney tumours
DELAYED PHASE	6-10 min	Urinary tract

SCAN PARAMETERS

SCAN TYPE	**Helical**
SCAN DIRECTION	Craniocaudal
GANTRY TILT	Nil
SLICE THICKNESS	3-5mm
SCOUT	120kv,50mA
PLAIN	120kv,200mA
PITCH	0.932

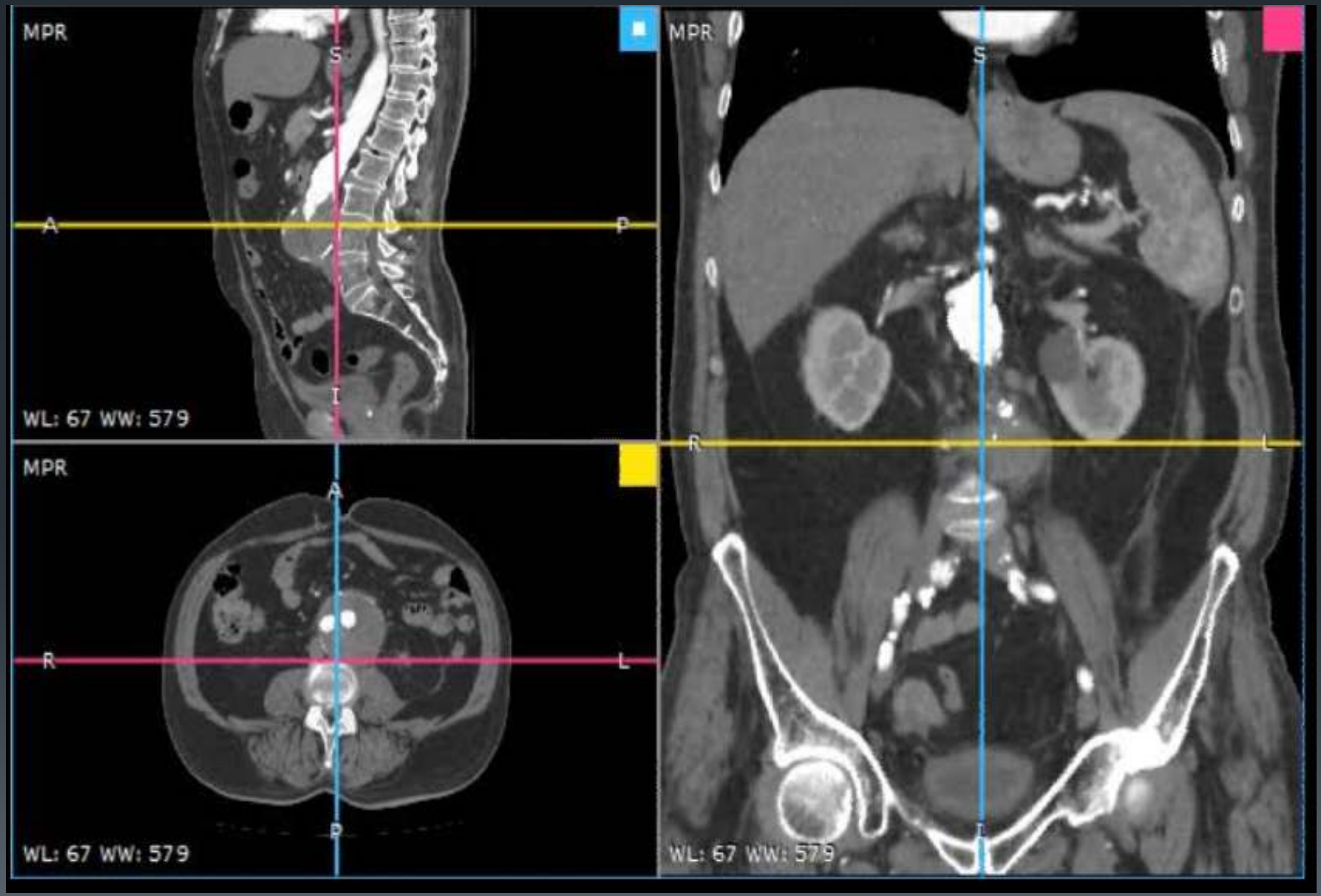
POST PROCESSING

- **MPR** - Multi planar reconstruction
- **MIP** - Maximum intensity projection

FILMING:

- **PLAIN :** Axial 4×6 2 film
  Coronal 5×5 1 film
- **CONTRAST :** Axial 4×6 2 film
  Coronal 5×5 1 film

MPR

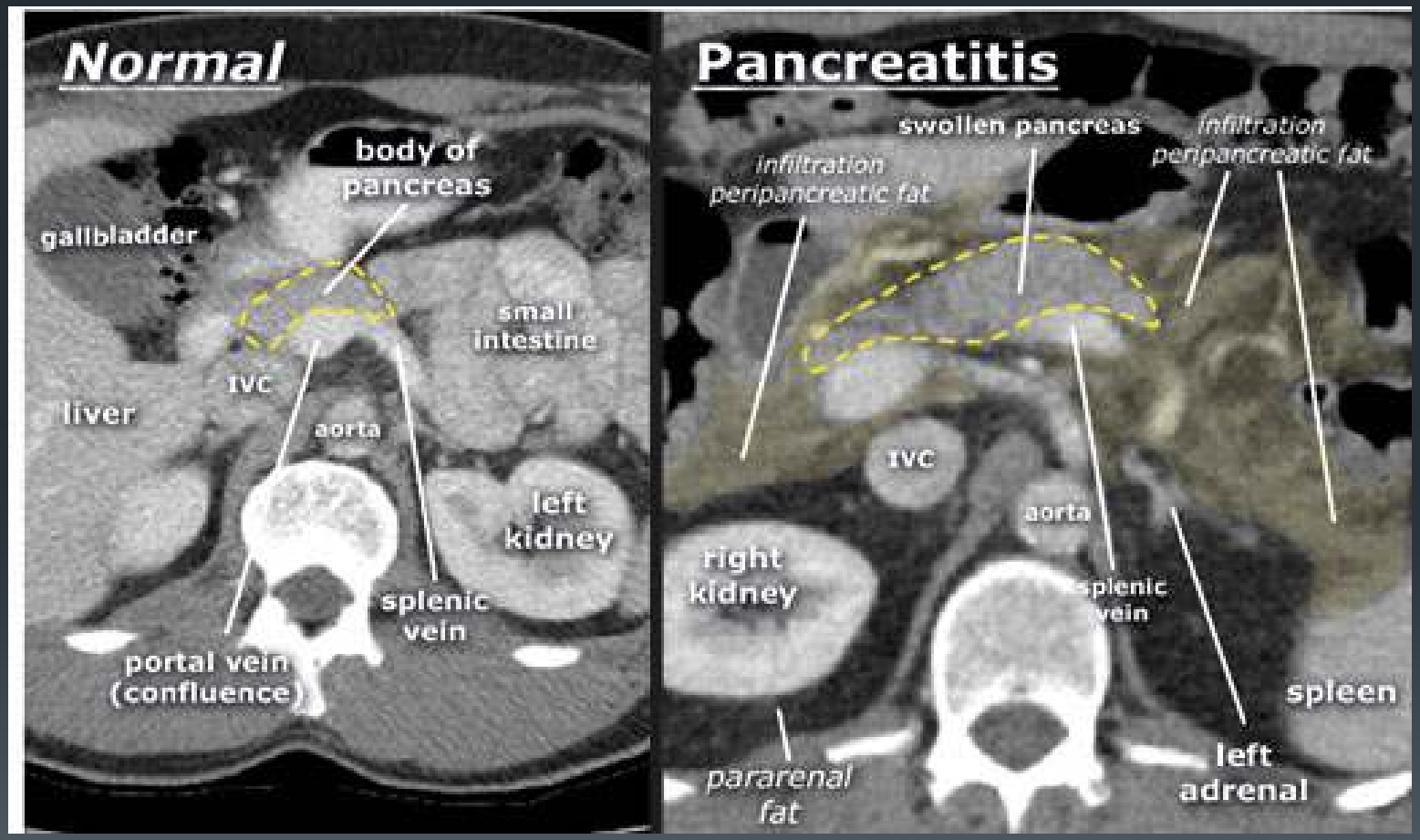


MIP

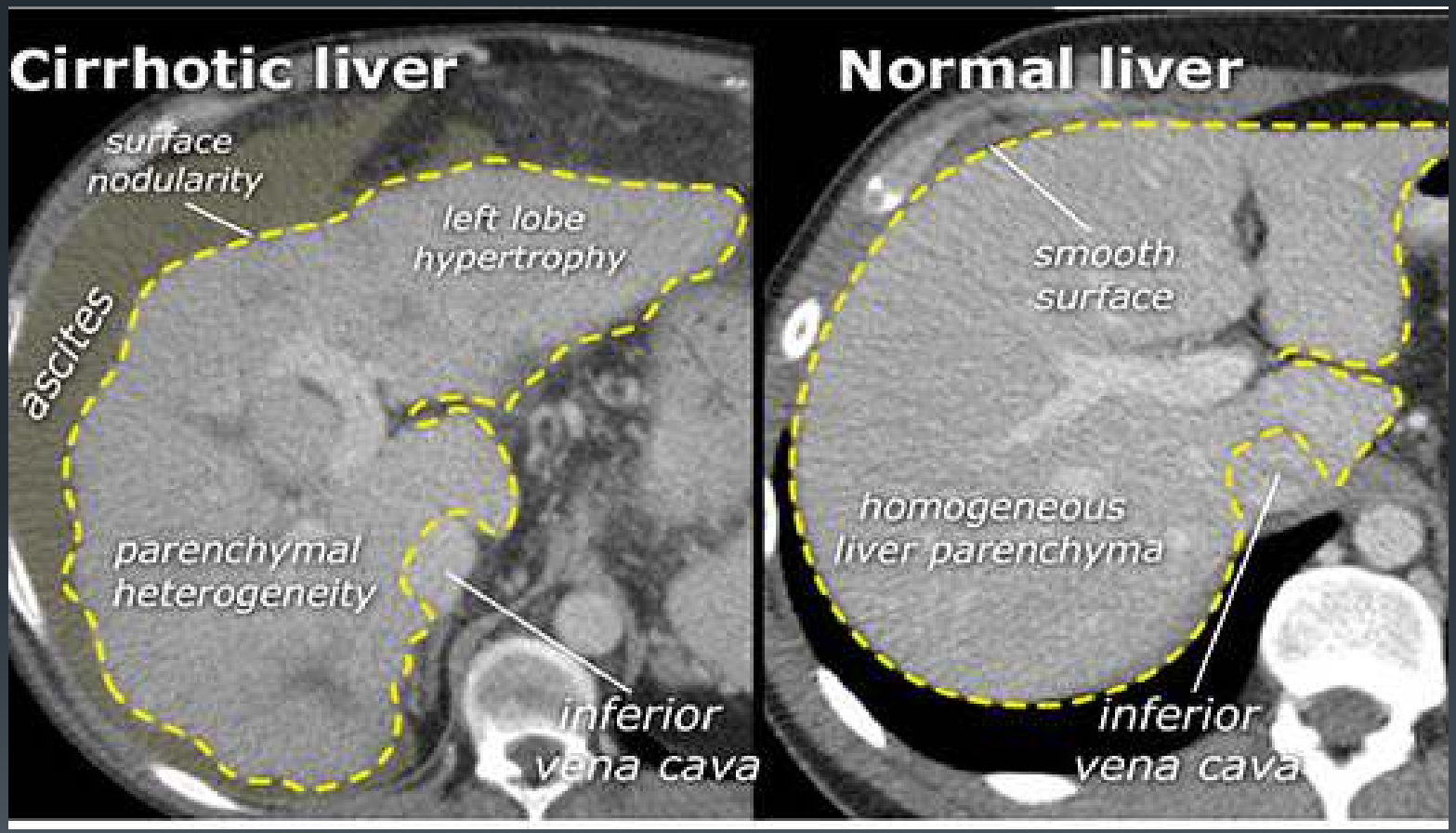
PATHOLOGY

- Pancreatitis
- Liver cirrhosis
- Liver metastases
- Kidney tumor
- Intestinal perforation
- Spleenomegaly
- Appendicitis
- Diverticulitis
- Ascites

PANCREATITIS



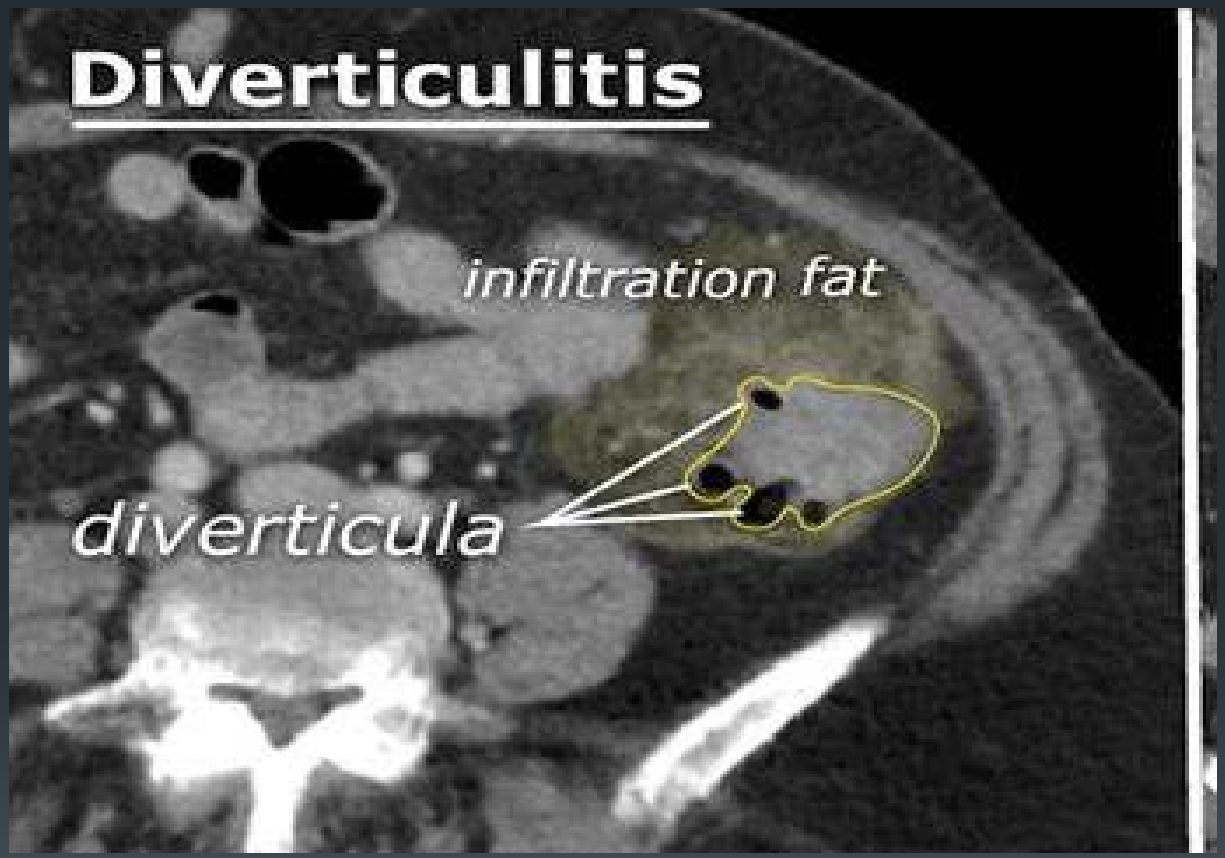
LIVER CIRRHOSIS



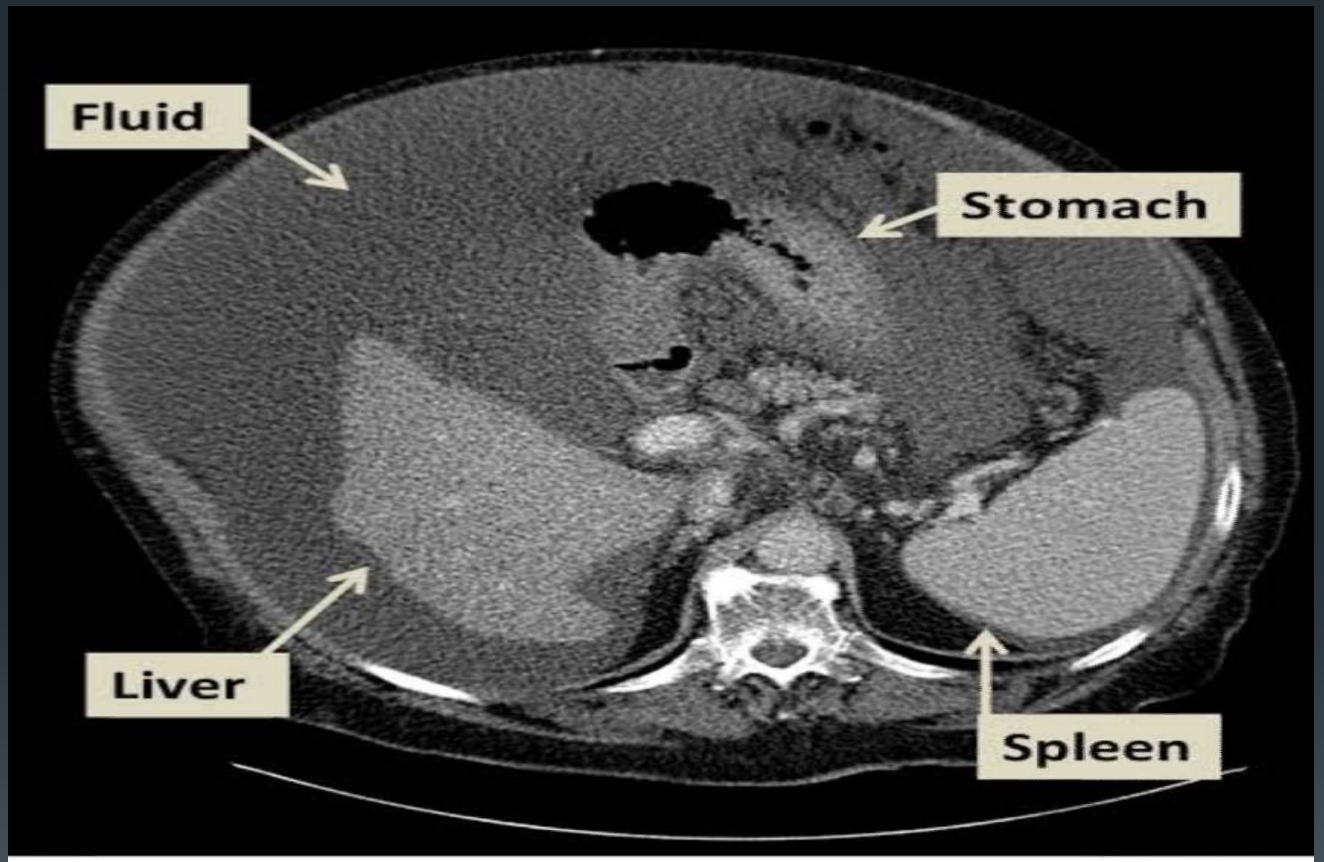
LIVER METASTASES

INTESTINAL PERFORATION

DIVERTICULITIS



ASCITEs



Ascites fluid surrounding multiple organs and distending the abdomen.

CONCLUSION

CT imaging has truly become a basic foundation in modern technology and also plays a vital role in characterizing the pathologies in abdominal structures.

Reference

CT&MRI Protocol - A Practical Approach by Sathish K. Bhargava

http://www.startradiology.com

https://radiologyassistant.nl

Computed Tomography by Dr.Euclid Seeram


thank you

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