SLIMS,PONDICHERRY

Date: 01/09/2021

From

DR.R.CHIDHAMBARAM ,
Professor and Head,
Dept.of radio-diagnosis and Imaging Sciences ,
SLIMS,PONDICHERRY
Bharath Institute of Higher Education and Research,
Chennai.

To

The Dean,
SLIMS
Bharath Institute of Higher Education and Research,
Chennai.

Sub: Permission to conduct value-added course: INTEGRATED ANATOMY TEACHING-LIVER

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added coursetitled: **INTEGRATED ANATOMY TEACHING USG LIVER** on 15/09/2021 . We solicit your kind permission for the same.

Kind Regards

Chidha

DR.R.CHIDHAMBARAM

FOR THE USE OF DEANS OFFICE

Names of Committee members for evaluating the course:

The Dean: Dr. Jayakumar

The HOD: Dr. R. Chidhambaram

The Expert: Dr. T. Pothiram.

The committee has discussed about the course and is approved.

Dean	Subject Expert	HOD
(Sign & Seal)	(Sign & Seal)	(Sign & Seal

DEAN
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES
OSUDU, AGARAM VILLAGE,
KOODAPAKKAM POST,
PUDUCHERRY - 605 502

DEPARTMENT OF RADIOLOGY
SRI LAKSHMINARAYANA
INSTITUTE OF MEDICAL SCIENCE
PUDUCHERRY - 605 002.

DEPARTMENT OF RADIOLOGY
SRI LAKSHMINARAYANA
INSTITUTE OF MEDICAL SCIENCE
PUDUCHERRY - 605 002.

OFFICE OF THE DEAN
Sri Lakshmi Narayana Institute of Medical Sciences
OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,
PUDUCHERRY - 605 502.
[Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME (P -II) dt. 11/07/2011]
[Affliated to Bharath University, Chennai - TN]

Circular

1/09/2021

Sub: Organising Value-added Course:. INTEGRATED ANATOMY TEACHING USG LIVER reg

With reference to the above mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research** is organizing **"INTEGRATED ANATOMY TEACHING USG LIVER"**. The course content and registration form is enclosed below.

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 10/09/2021 Applications received after the mentioned date shall not be entertained under any circumstances.

Encl: Copy of Course content

Dean

DEAN
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES
OSUDU, AGARAM VILLAGE,
KOODAPAKKAM POST,
PUDUCHERRY - 605 502

BIHER

SLIMS

VALUE ADDED COURSE

1. Name of the programme & Code :

Integrated anatomy teaching-liver by ultrasound

RAD 03

2. Duration & Period

30 hrs & September 2021– January 2021 & February 22– August 2022

3. Information Brochure and Course Content of Value Added Courses

Enclosed as Annexure- I

4. List of students enrolled

Enclosed as Annexure- II

5. Assessment procedures:

Multiple choice questions- *Enclosed as Annexure- III*

6. Certificate model

Enclosed as Annexure- IV

7. No. of times offered during the same year:

September 2021– January 2021 & February 22– August 2022

8. Year of discontinuation: 2022

9. Summary report of each program year-wise

Value Added Course- September 2021 - August 2022					
Sl. No	**Course Code**	**Course Name**	**Resource Persons**	**Target Students**	**Strength & Year**
1	**RAD 03-1**	**Integrated anatomy teaching-liver by ultrasound**	Dr. Jothibasu	1st MBBS	20 (Sep 21 – Jan22)
2	**RAD 03 -2**	**Integrated anatomy teaching-liver by ultrasound**	Dr. Srinivasan	1st MBBS	20 (Feb22-Aug22)

10. Course Feed Back

Enclosed as Annexure- V

RESOURCE PERSON

COORDINATOR

BIHER

DEPARTMENT OF RADIOLOGY
SRI LAKSHMINARAYANA
INSTITUTE OF MEDICAL SCIENCE
PUDUCHERRY - 605 002.

SLIMS

DEPARTMENT OF RADIOLOGY
SRI LAKSHMINARAYANA
INSTITUTE OF MEDICAL SCIENCE
PUDUCHERRY - 605 002.

From

Date: 09/05/2022

Dr.R.Chidhambaram,
Professor and Head,
Department of Radiology,
Sri Lakshmi Narayana Institute of Medical Sciences
Bharath Institute of Higher Education and Research,
Chennai.

Through Proper Channel

To

The Dean,
Sri Lakshmi Narayana Institute of Medical Sciences
Bharath Institute of Higher Education and Research,
Chennai.

Sub: Completion of value-added course: INTEGRATED ANATOMY TEACHING-LIVER

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: : **INTEGRATED ANATOMY TEACHING-LIVER** for 20 medical students (batch 2) .

We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards,

DR.R.CHIDHAMBARAM

DEPARTMENT OF RADIOLOGY
SRI LAKSHMI NARAYANA
INSTITUTE OF MEDICAL SCIENCE
PUDUCHERRY - 605 002.

Encl: Certificates

Photographs

SRI LAKSHMI NARAYANA

INSTITUTE OF MEDICAL SCIENCES

DEPARTMENT OF RADIOLOGY AND IMAGING SCIENCES

SLIMS

INTEGRATED

ANATOMY TEACHING

Ultrasonography of liver

LiverLobes

Normal anatomy in variousplanes

SLIMS

Segmental Anatomy of liver **Couinaud classification**

SLIMS

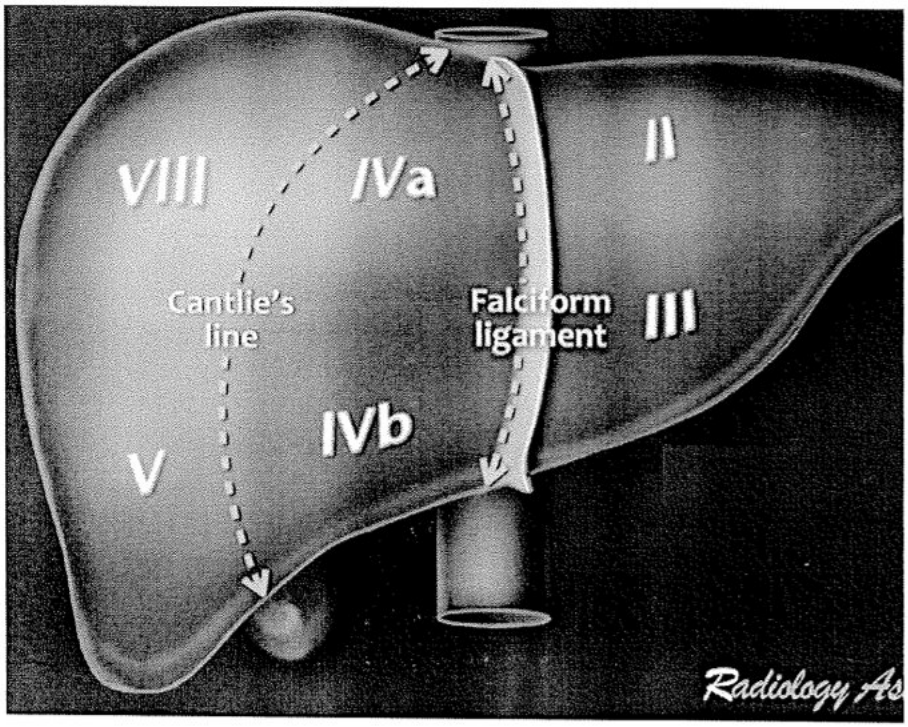
- The Couinaud classification of liver anatomy divides the liver into 8functionally independent segments(I-VIII).

- Each segment has its own vascular inflow, outflow, and biliarydrainage.

- In the centre of each segment there is a branch of thecportal vein,hepatic artery and bileduct.

- In the periphery of each segment there is vascular outflow through thehepatic veins.

- **Couinaud divided the liver into a functional left and right liver by a main portalscissurae containing the middlehepatic vein. This is known as Cantlie's line.**
- **Cantlie's line runs from the middle of the gallbladder fossa anteriorly to the inferior venacava posteriorly.**



1.) Middle hepatic vein divides the liver into right and left lobes (or right and left hemiliver).This plane runs from the inferior vena cava to the gallbladder fossa.

2.) Right hepatic vein divides the right lobe into **anterior segment (V, VIII)** and **posteriorsegment (VI,VII)**.

3.) The Falciform ligament divides the left lobe into a **medial segment**IVand a **lateral segment**(II and III). (- radiology assistant)

or

The left **hepatic vein (superiorly) and left intersegmental fissure(inferiorly) divide theleft hepatic lobe into a medial segment and a lateral segment.**

- **The portal vein** divides the liver into upper and lowersegments.

- Theleftandrightportalveins**branch**superiorlyandinferiorlytoprojec tintothe center of eachsegment.

- Right portal veindivides

  - anterior segment into superior portion(VIII) and inferior portion(V)

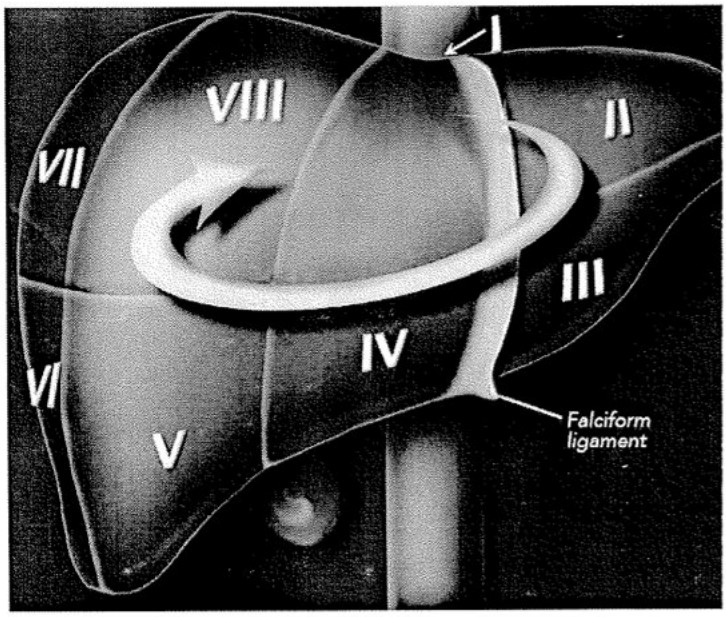
  - Posterior segment into superior portion(VII) and inferior portion(VI)

- Left portal veindivides

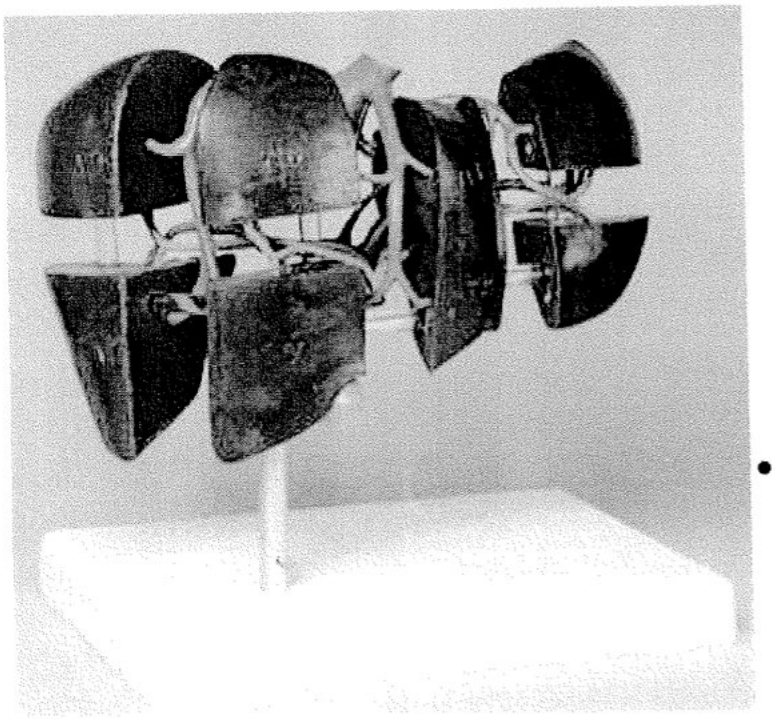
  - Lateral segment into superior portion (IVa) and inferior portion(IVb)

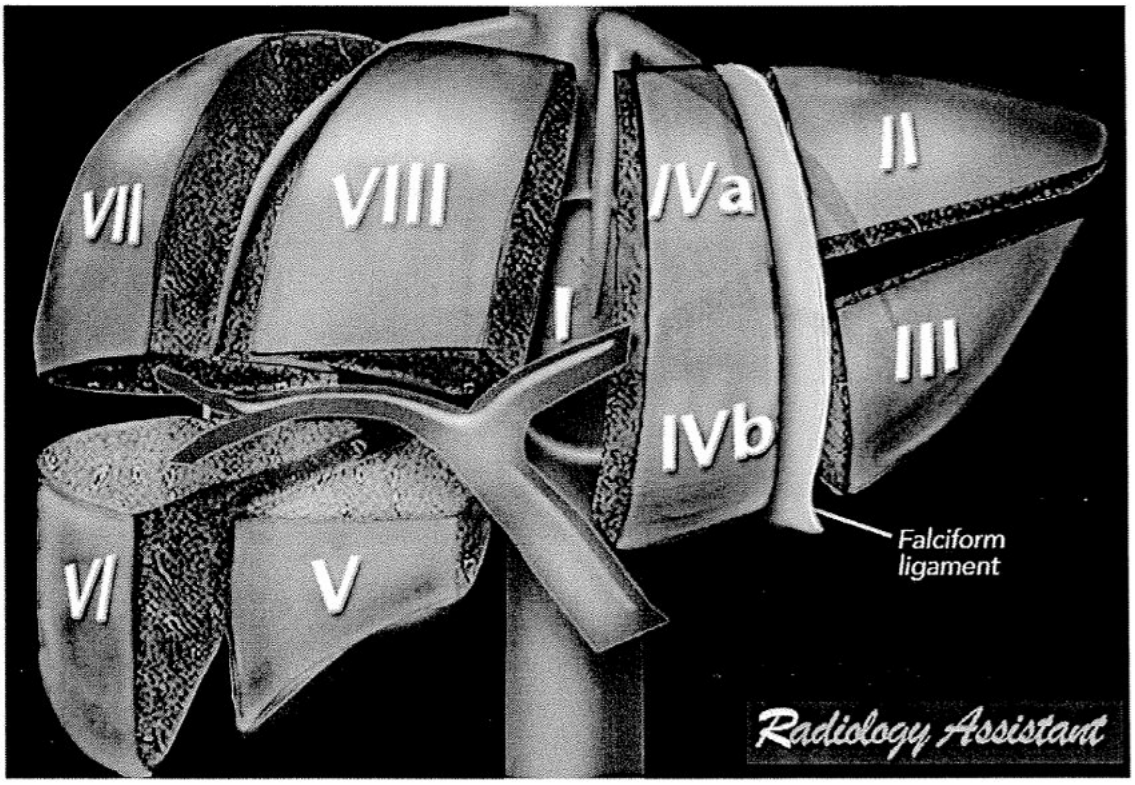
  - Medial segment into superior portion (II) and inferior portion(III).

- **Segment I, the caudate lobe of the liver, is located posteriorly, adjacent to the intrahepatic portion of the inferior vena cava(IVC).**


I
II
III
IV
V
VI
VII
VIII
Falciform ligament

The




VII
VIII
I
IVa
II
III
IVb
Falciform ligament
VI
V
Radiology Assistant

Normal anatomy in Various Planes

- With the patient in the supine position and properly draped, **place the probe transversely to the right of the midline of epigastrium with the beam aimed slightly up**. The liver will appear with a speckled pattern and a hyperechoic halo (sometimescalled"train-tracks"whenportalbranchesare**seenintheirlongaxis**) around the portal veins (periportal connective tissue/ at). Identify the caudate lobe separating the inferior vena cava and left portal vein (and ascending branch ofleftportalvein).Thereisahyperechoiclineinthefissurebetweencaudateand left liver lobe demarcating the ligamentum venosum (the patient should be asked to take a deep breath and hold while you are scanning theliver).

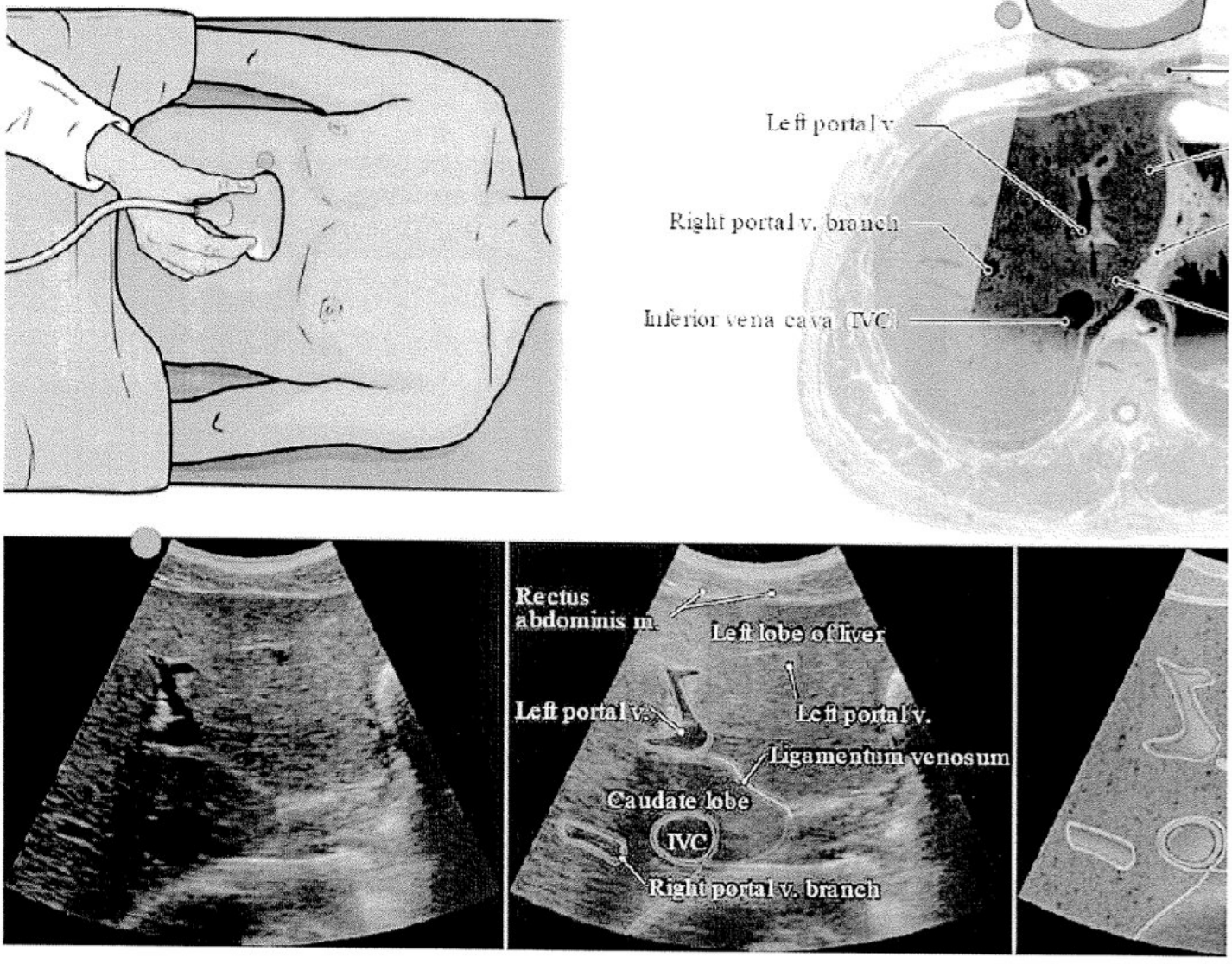


Fig : Epigastric transverse view of the left liver lobe, left portal vei caudate lobe, inferior vena cava, and ligamentum venosum.

2.) SUBCOASTAL TRANSVERSE

(INFERIOR VENA CAVA, HEPATIC VEINS)

- With the patient in the supine position and properly draped, place the probe **transversely under the right costal margin** with the beam aimed up, followingthe inferior vena cava and adjusting the tilt and angle when hepatic veins are identified. Todifferentiate between hepatic and portal veins, notice that there is no halo or train tracks around hepatic veins entering the inferior vena cava. Attempt to identify the left, middle, and right hepaticveins.

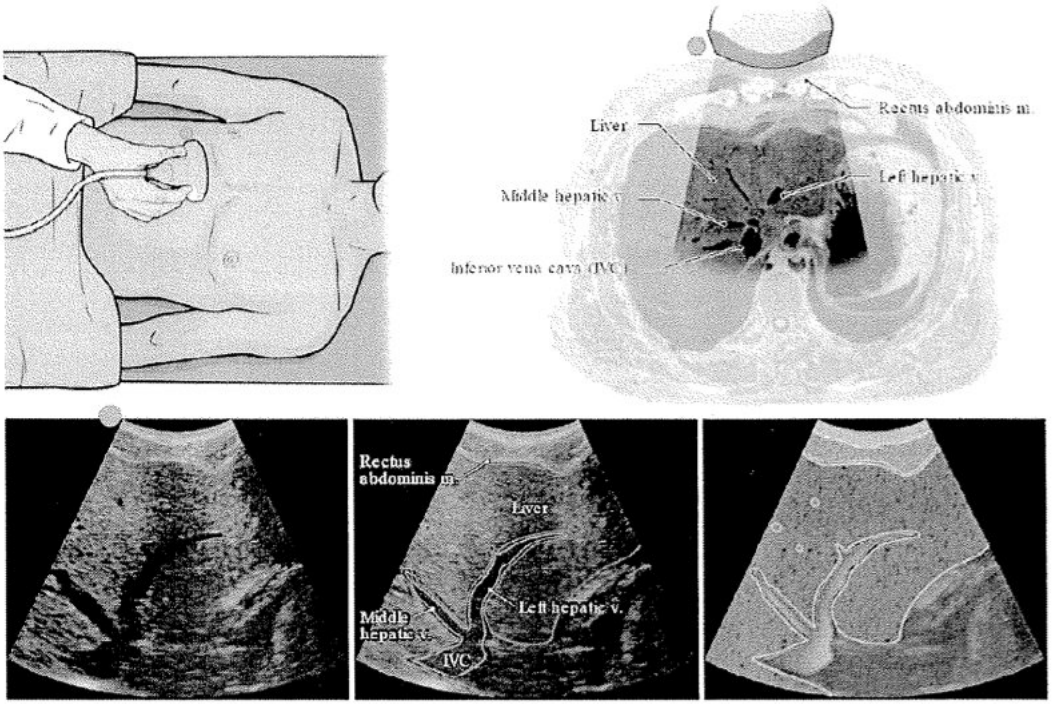


Fig :- Subcostal transverse view of the inferior vena cava receiving the middle and left hepatic veins.

3.) SUBCOSTAL Longitudinal (Parasagittal)

(LEFT LIVER LOBE, CAUDATE LOBE, PORTAL VEIN, COMMON HEPATIC ARTERY)

- With the patient in the supine position and properly draped, place the probe in longitudinal orientation to right of midline under the costal margin. Adjust the probe and tilt/position it to identify the left lobe of the liver and caudate lobe. Identify the portal vein emerging from behind the neck of the pancreas as a continuation of the superior mesenteric vein below, accompanied by the common hepaticartery.

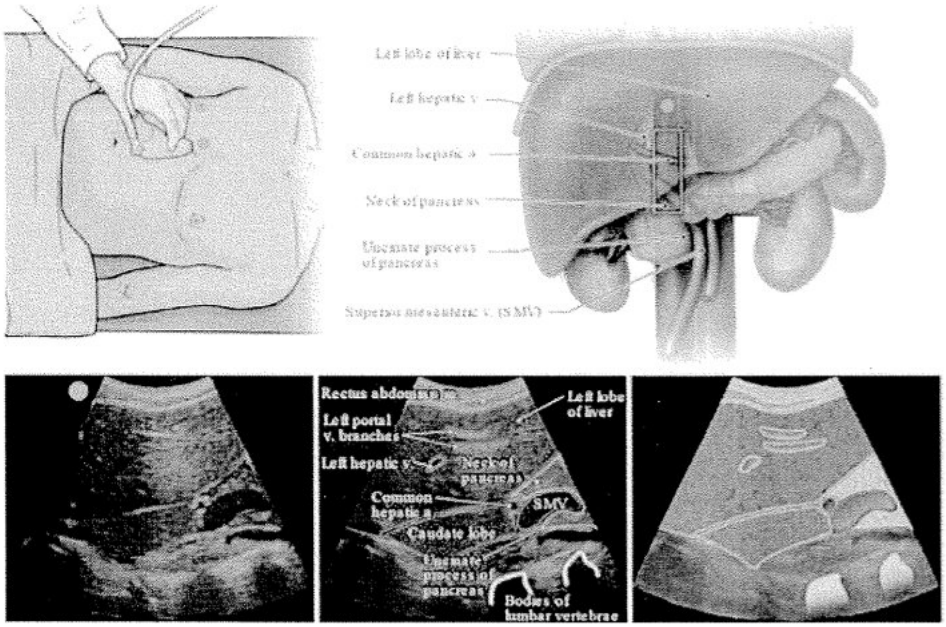
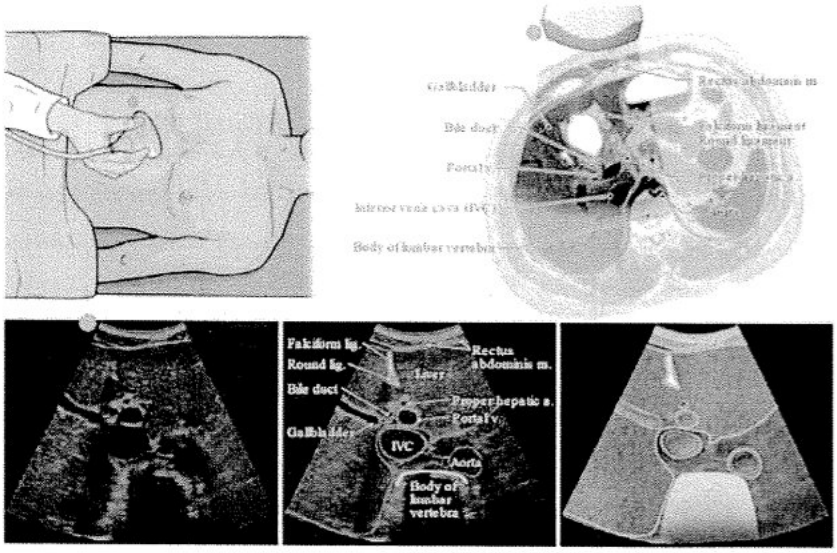


Fig : Subcostal longitudinal view of the left lobe of the liver, caudate lobe, the portal vein forming (from superior mesenteric vein being joined by the splenic vein), the surrounding neck and uncinate process of the pancreas, and the common hepatic artery.

4.) Subcostal Transverse (Oblique)

(PORTAL TRIAD, INFERIOR VENA CAVA, AORTA)

- With the patient in the supine position and properly draped, place the probe slightly oblique to the transverse plane of the abdomen and parallel to the right side of the costal margin (marker should be pointing to the right, although some clinical protocols have the marker pointing to the left shoulder). Identify and follow the portal vein to the porta hepatis and adjust and tilt/angle to see the "Mickey Mouse" sign. This sign refers to the head being the portal vein, right ear is the bile duct, and the left ear is the proper hepatic artery. The inferior vena cavashouldbeseenposteriortotheportalvein(omentalforamen)an dtheaorta just to the left of the body of the lumbarvertebra.



ig: Transverse (**oblique**) subcostal view of the portal triad (portal vein, proper hepatic artery, and bile uct) entering/exiting the liver via the porta hepatis. The inferior vena cava is seen immediately posterior o the portal vein. The hyperechoic falciform ligament and round ligament of the liver (ligamentum teres epatis) are seen at the border between the left lobe of the liver (segments 2, 3) and the quadrate lobe egment4b).

5.) Subcostal Longitudinal (Oblique)

(PORTAL VEIN, INFERIOR VENA CAVA)

- With the patient in the supine position and properly draped, place the probe under the right side of the costal margin oriented along the longitudinal axis of the body. Rotate the probe counterclockwise to oblique longitudinal orientation (the portal vein crosses obliquely from left to right) to lie along the long axis of theportalvein.Tiltup/downandleft/righttoidentifytheportalveinapproaching and entering the liver. The inferior vena cava posteriorly has a vertical course, so it is not parallel to the portal vein or more than a fewcentimeters.

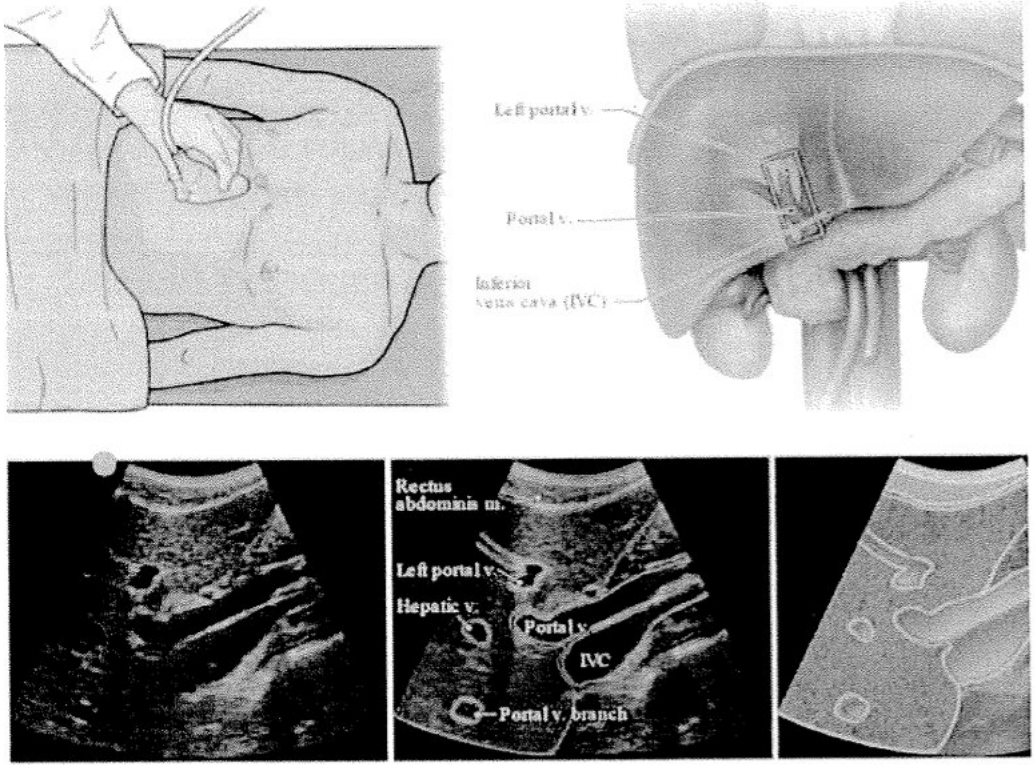


Fig : Longitudinal (oblique) subcostal view of the portal vein approa
and entering the liver at the porta hepatis. The inferior vena cava i
posterior to the portal vein.

6.) Subcostal Transverse view

(DIVISION OF PORTAL VEIN, RIGHT AND LEFT PORTAL VEINS, INFERIOR VENA CAVA)

- Withthepatientinthesupinepositionandproperlydraped,placetheprobetothe right of midline transversely to the axis of the body, aiming up under the costal margin. Ask the patient to take a deep breath and tilt/fan the probe to identify the inferior vena cava, tail of caudate lobe, and portal vein dividing into right and left branches. The portal veins have characteristic hyperechoic halo/train tracks surroundingtl
-

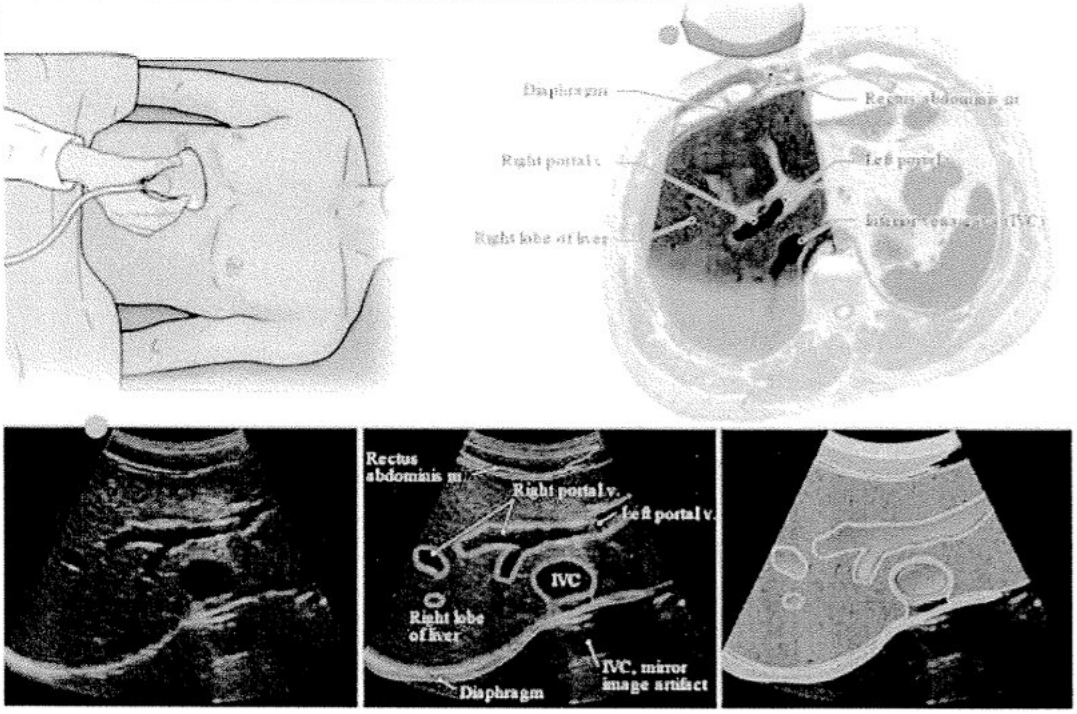


Fig : Transverse subcostal view of the portal vein dividing within the liver into right and left portal veins. The inferior vena cava is seen posterior to the dividing portal vein (separated by the "tail" of the caudate lobe).

7.) Subcostal Longitudinal view

(INFERIOR VENA CAVA, LIVER RIGHT ATRIUM, RIGHT VENTRICLE)

- With the patient in the supine position and properly draped, place the probe longitudinally oriented to the right of the midline under the right costal margin, aiming up toward the thorax. Ask the patient to take a deep breath and identifythe liver speckled pattern and veins, and note inspiratory collapse and rhythmic transmitted pulsations of the inferior vena cava. The portal vein is seen anterior to the inferior vena cava accompanied by the proper hepaticartery.

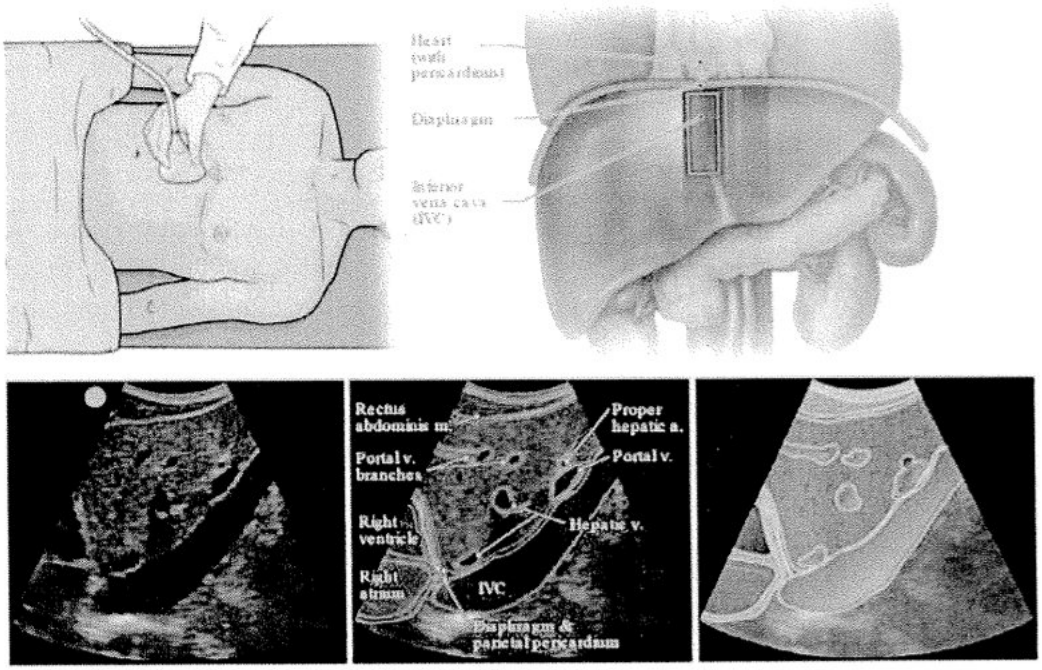


Fig : Longitudinal subcostal view of the course of the inferior vena cava posterior to the liver and approaching the right atrium (via caval hiatus of diaphragm).

8.) Longitudinal (Intercostal Oblique)

(RIGHT LIVER LOBE, MORISON'S POUCH, RIGHT KIDNEY)

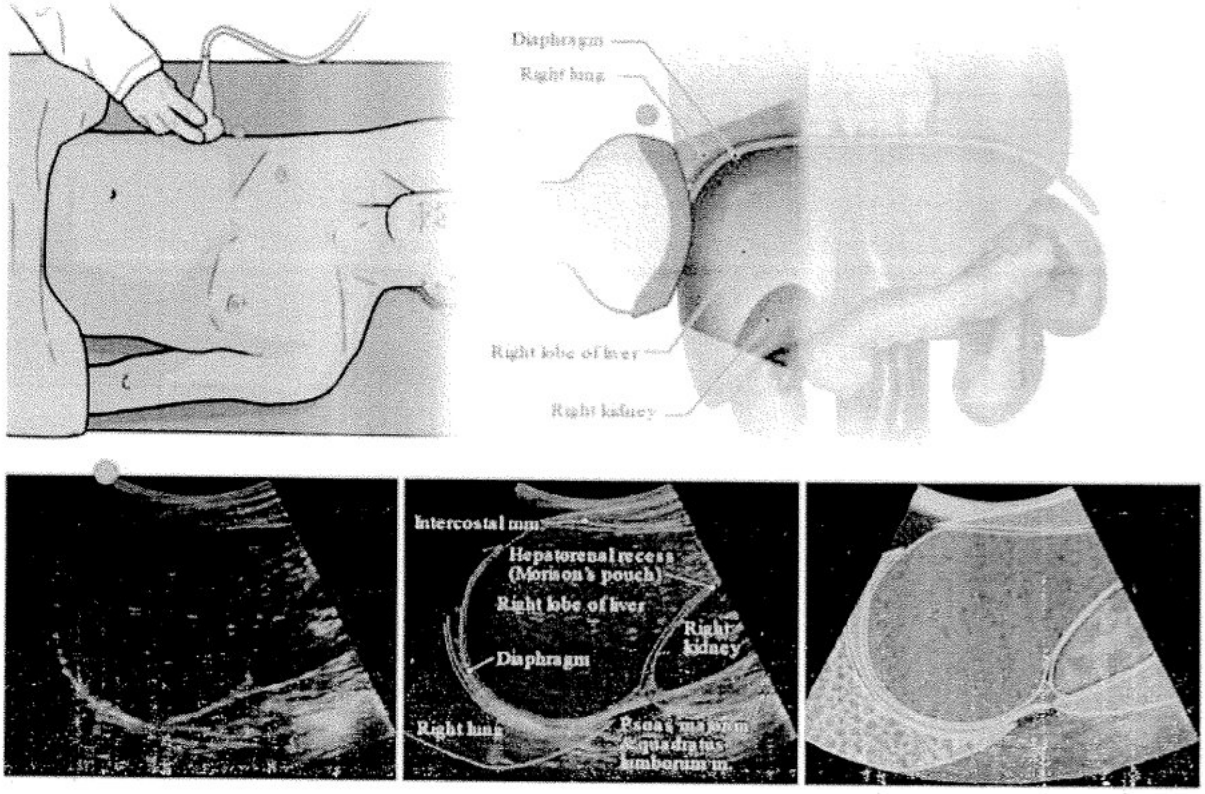
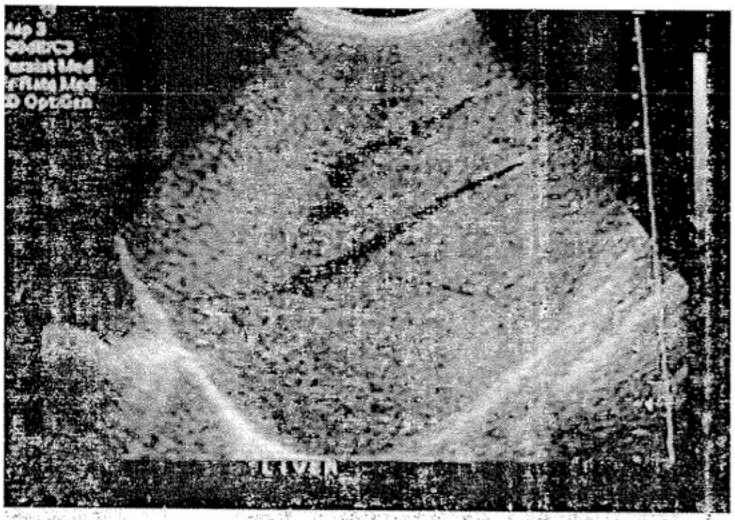
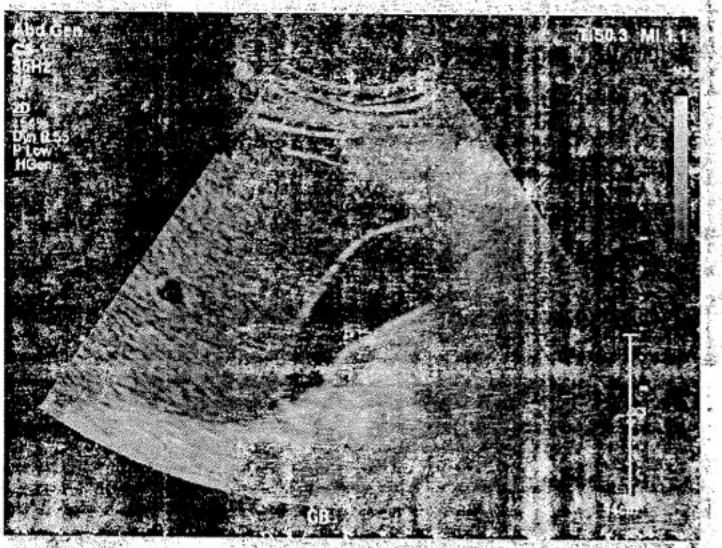
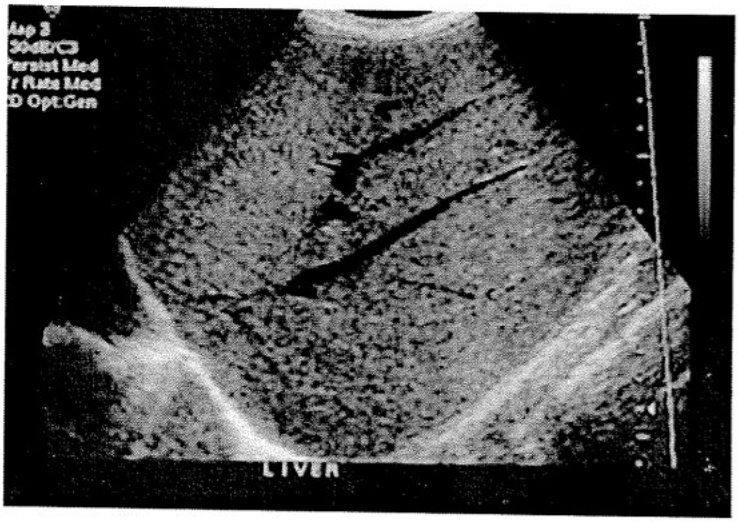


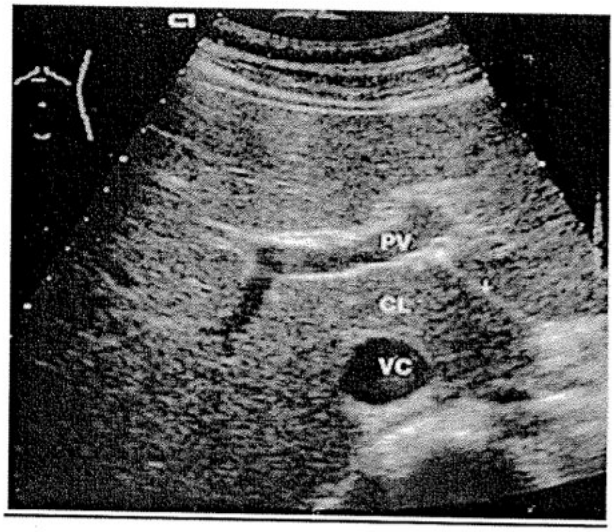
Fig : Longitudinal (intercostal oblique) view of the right hemithorax, diaphragm, right lobe of liver, Morison's pouch, and right kidney

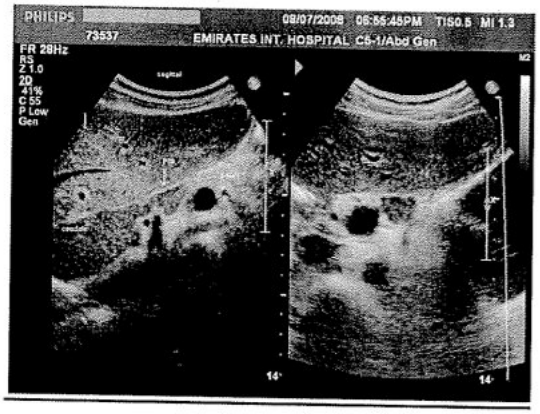
LIVER ANATOMY BY ULTRASOUND






LIVER


PV
CL
VC



COURSE CONTENTS

NORMAL USG LIVER LOBES

NORMAL LIVER VASCULATURE

NORMAL ECHOTEXTURE OF LIVER

NORMAL ANATOMY OF GALL BLADDER

BIHER

SLIMS

VENUE:

LECTURE HALL IV

TOME:2 TO 4 PM.