

UCL International
Hepatology
ULTRASOUND COURSE

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LONDON
ROYAL FREE HOSPITAL



INTRODUCTION TO NORMAL LIVER ULTRASOUND

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WFUMB Center of Education

EFSUMB Ultrasound Learning Center

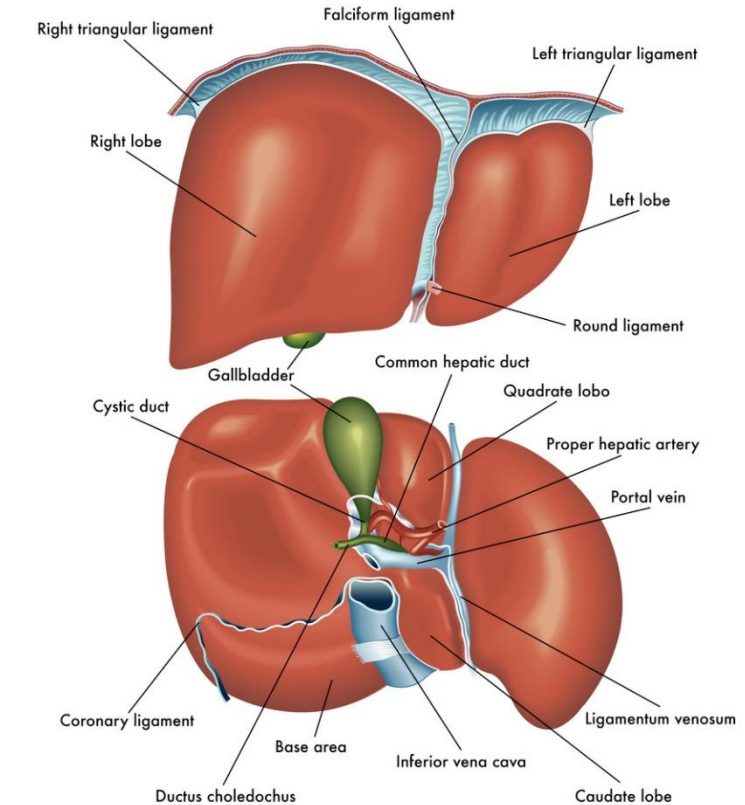


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- **Anatomical elements**
- Vascular structures - portal vein and hepatic artery with their branches, suprahepatic veins
- Bile ducts
- Ligaments

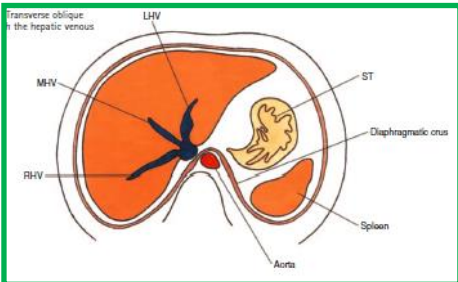
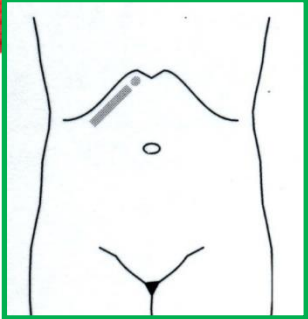
- **Relationships** with surrounding organs (RK, right adrenal gland, gallbladder, pancreas, stomach, diaphragm)



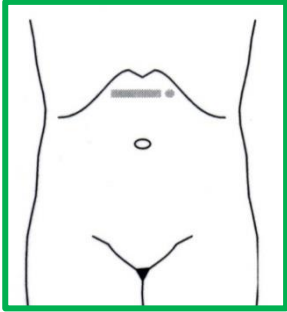
EXAMINATION TECHNIQUE

- Patient in fasting conditions
- Complete, systematic sweeping of the entire liver structure in at least 2 sections, transverse and longitudinal, is required
- Identification of vascular structures
- Characterization of liver structure - normally homogeneous
- The liver creates an ultrasound window to examine the organs in the right hypochondrium, e.g. gallbladder, right kidney.

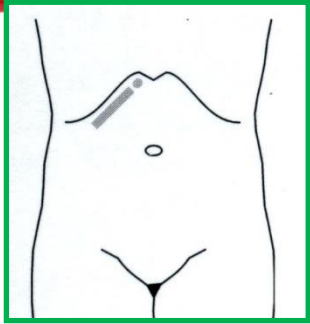
SUBCOSTAL RIGHT OBLIQUE SECTION



LEFT LIVER LOBE⁶

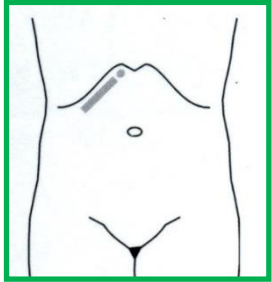


RIGHT LIVER LOBE⁷

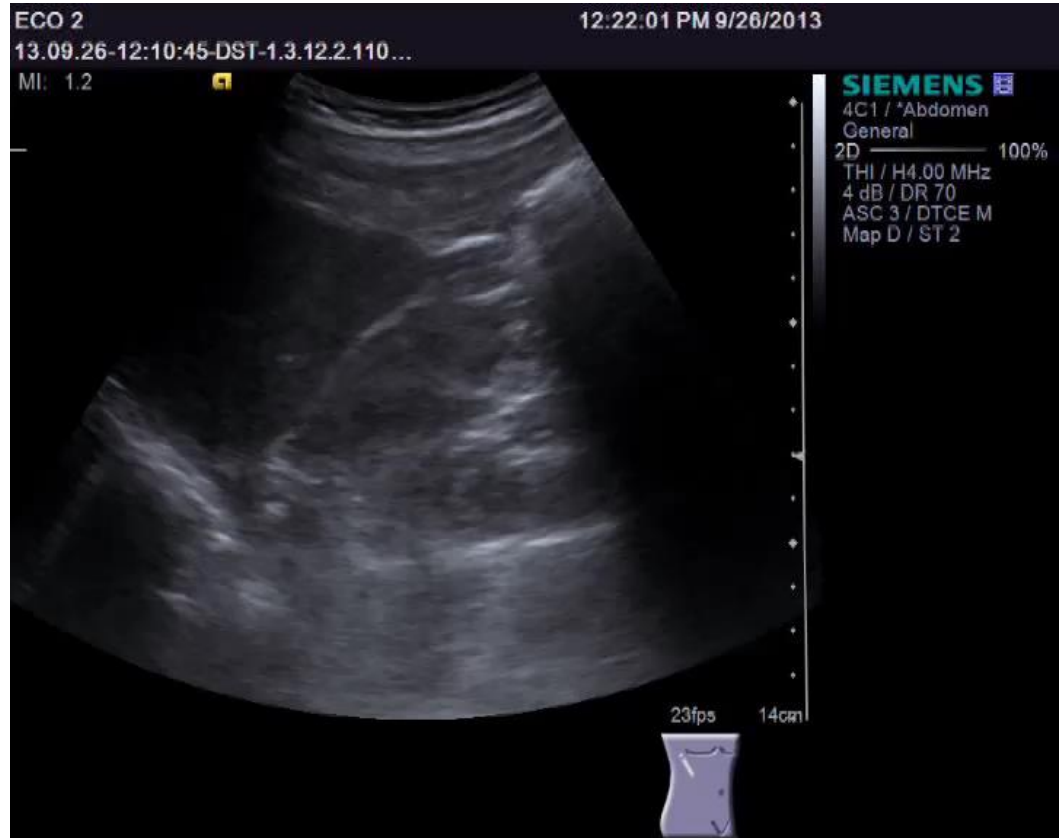
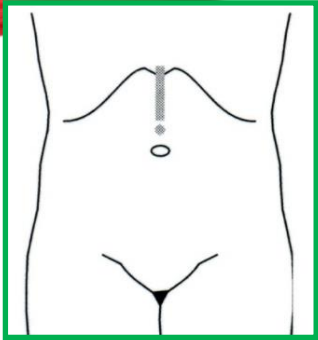


SUBCOSTAL RIGHT OBLIQUE SECTION

- Hepatic veins
- Bifurcation of the portal vein

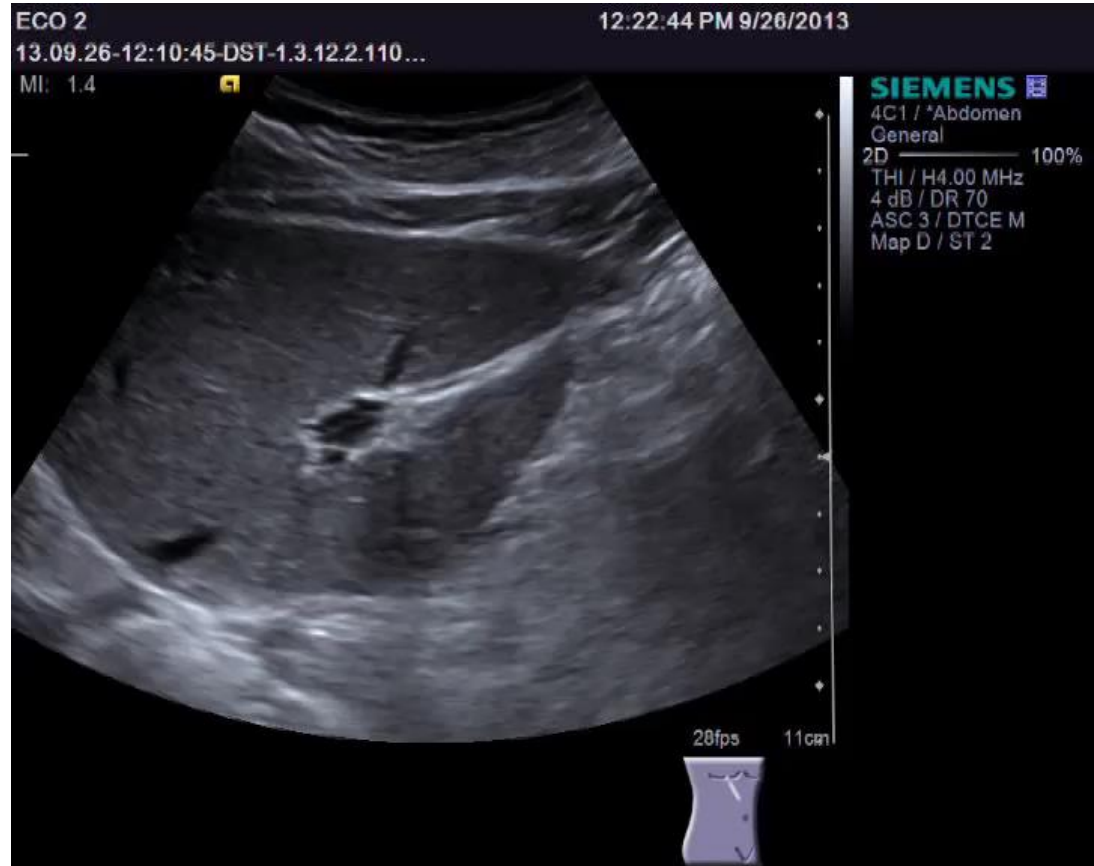


LONGITUDINAL SECTION

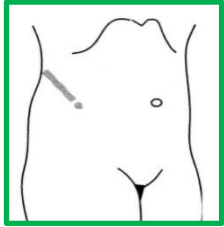


HILUM SECTION

- Perpendicular to the costal rim



INTERCOSTAL SECTIONS

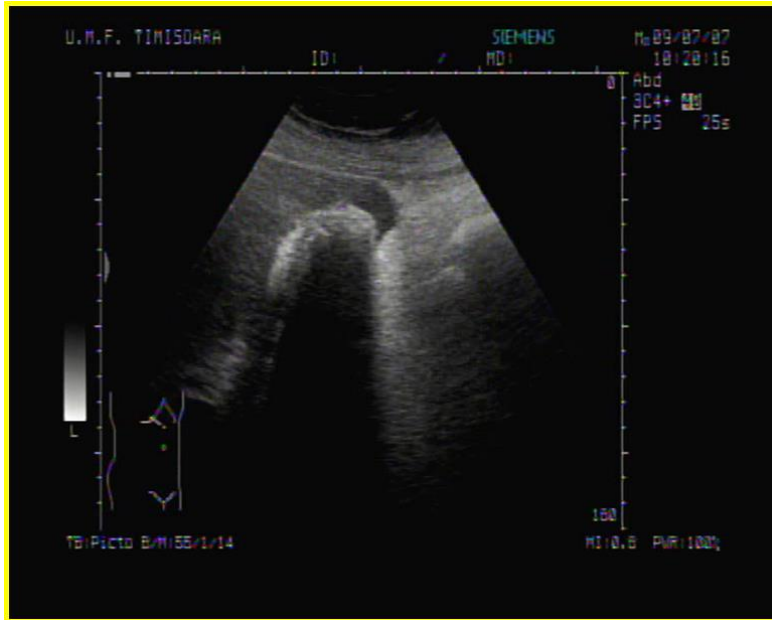


LIVER SURFACE

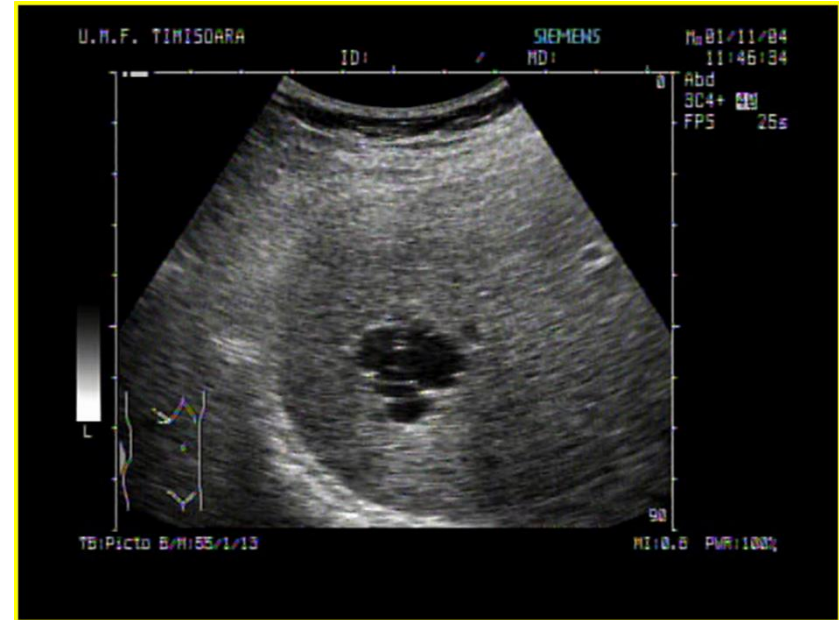
- High frequency probe



Hyperechoic



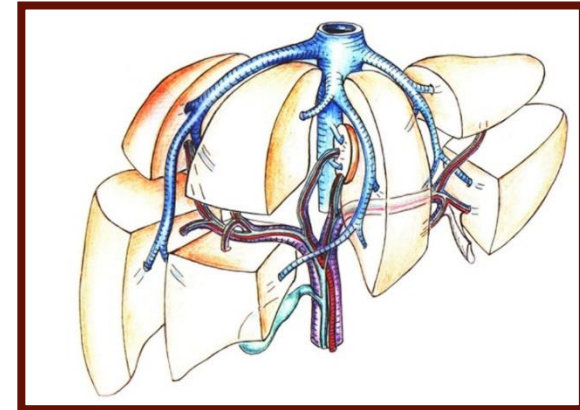
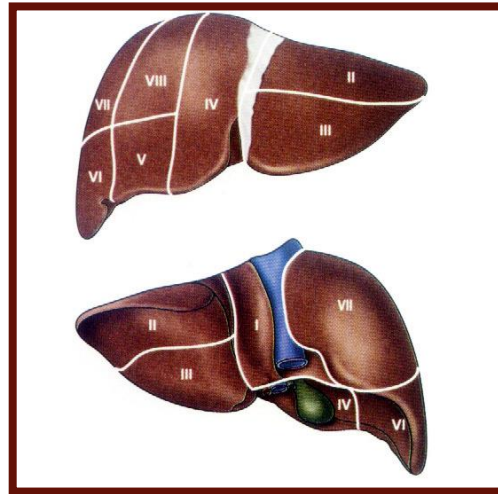
Transonic

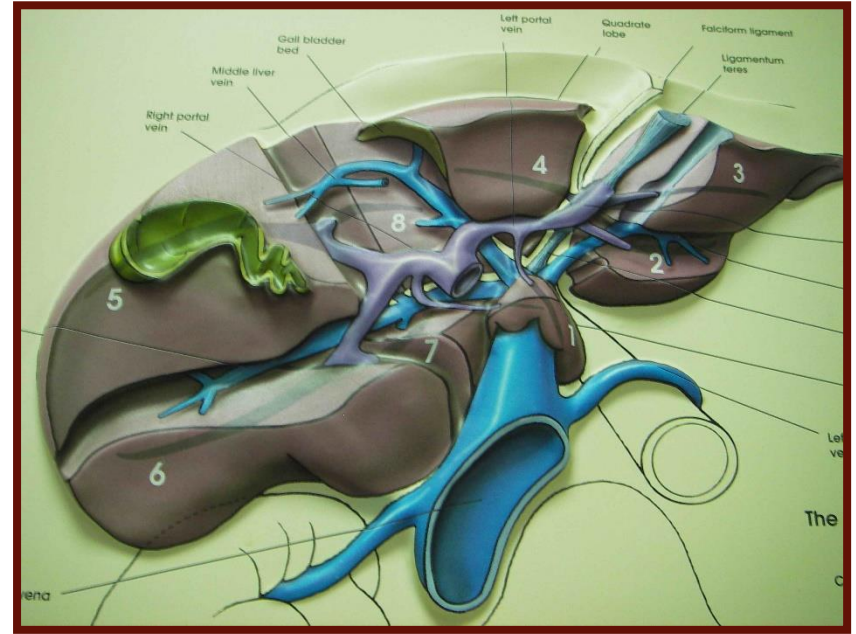
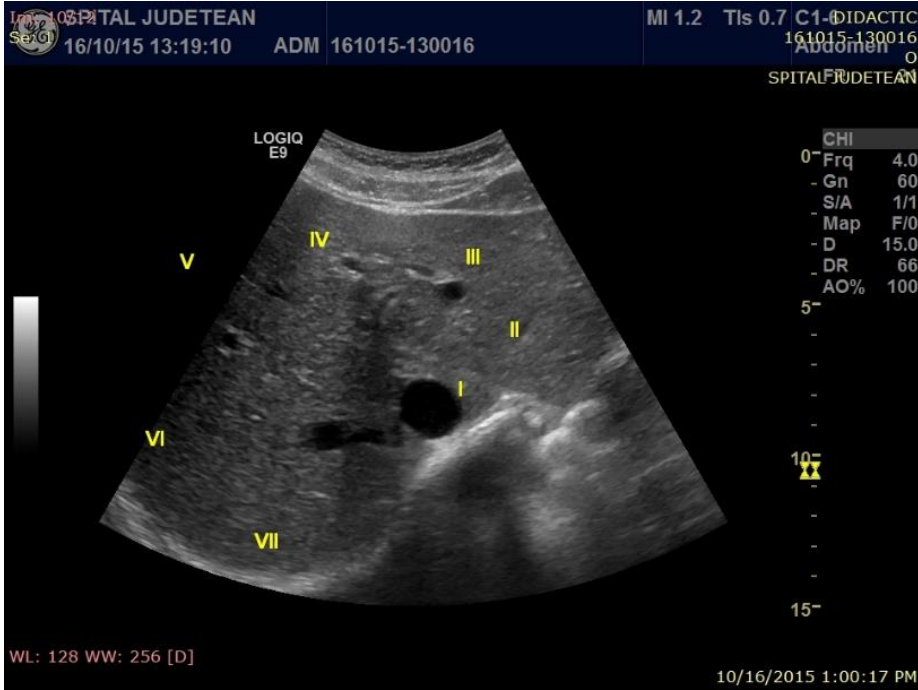


LIVER SEGMENTATION (COUINAUD – 1954)

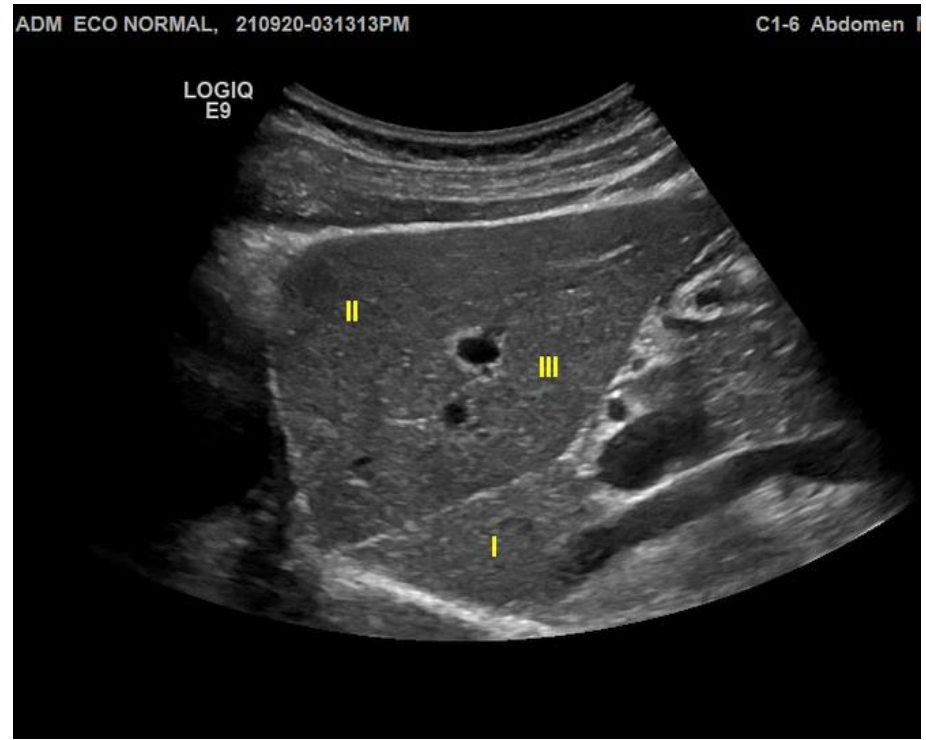
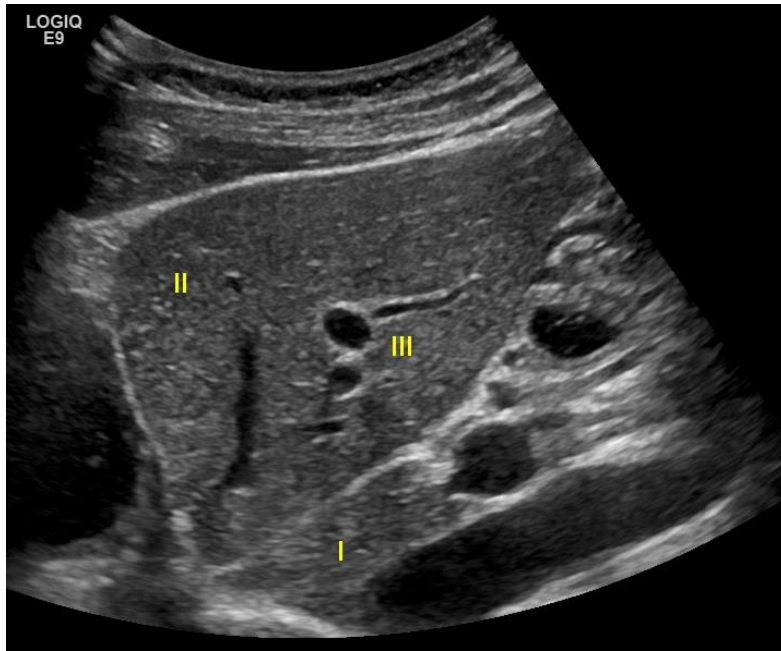
- Caudate lobe - segment I
- Left liver lobe. - segments I-IV
- Right liver lobe - segments V-VIII

- Each of these segments has its own vascular and biliary architecture. The segments are autonomous units, each unit can be resected without damaging the remaining segments.

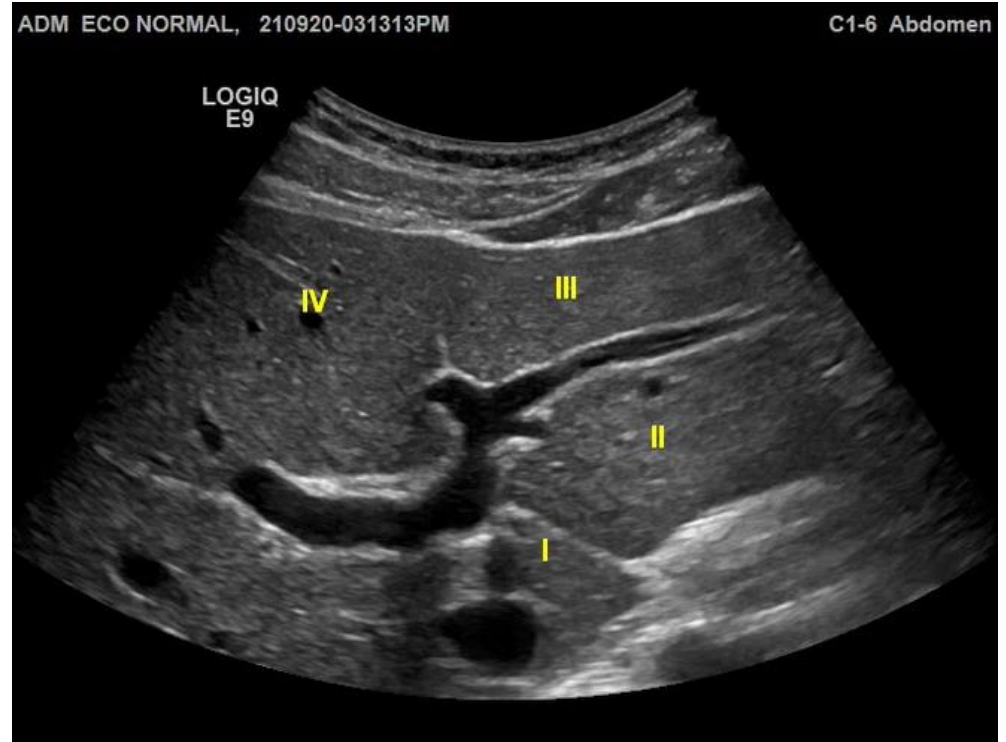
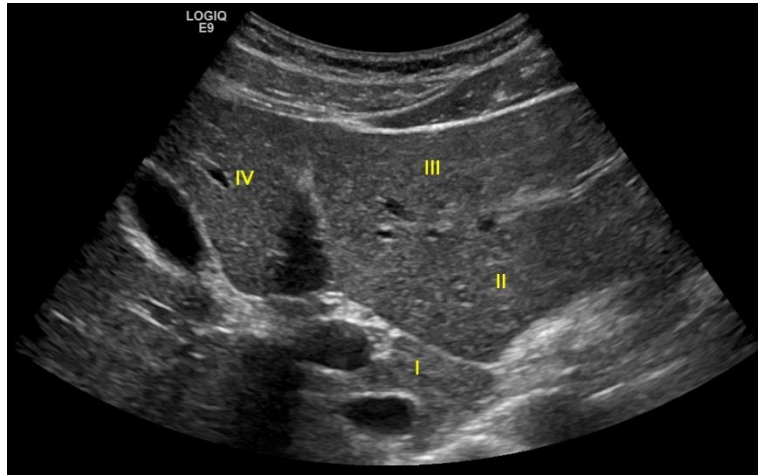




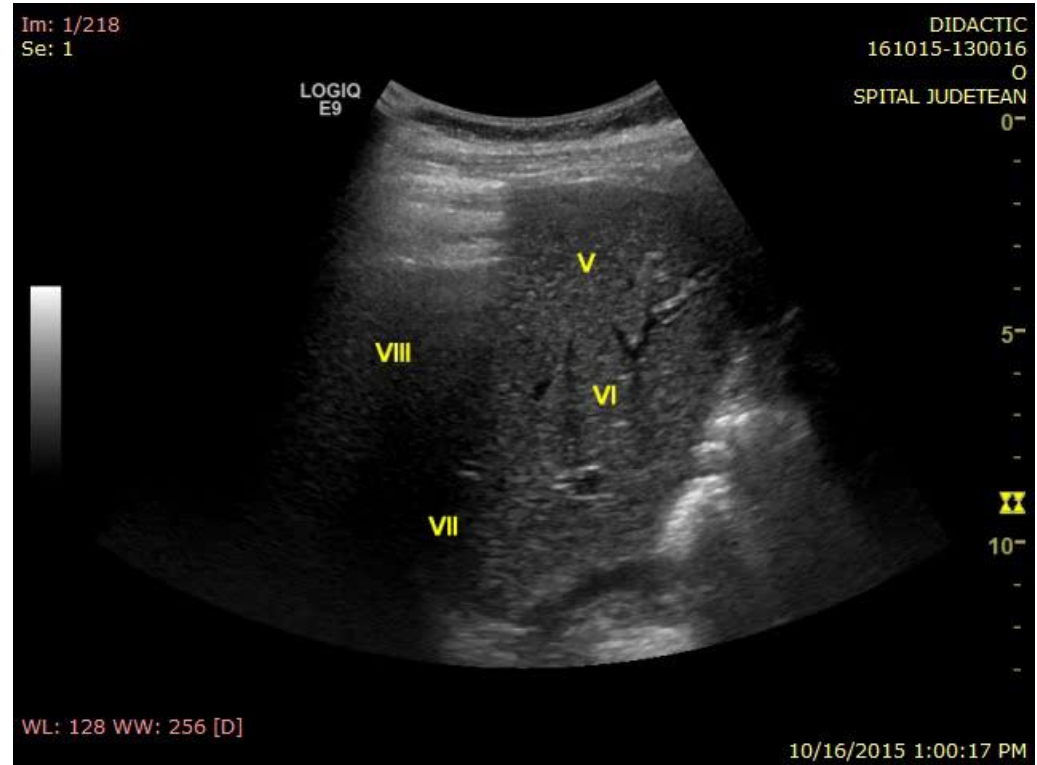
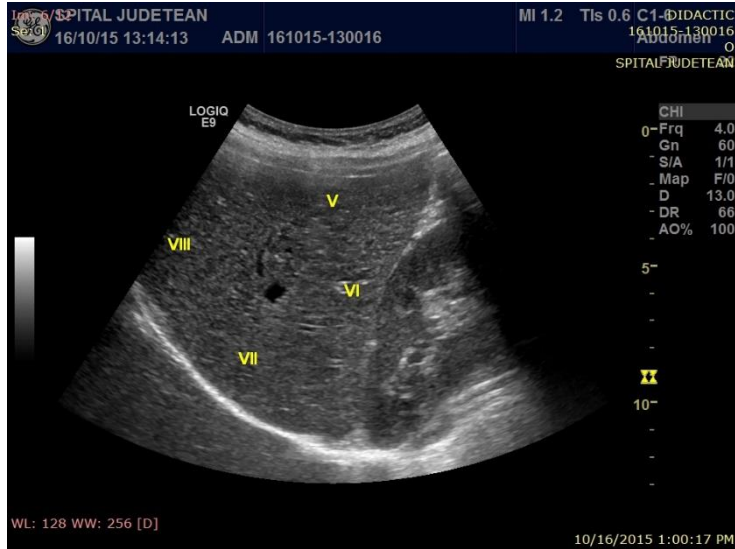
LONGITUDINAL SECTION LLL



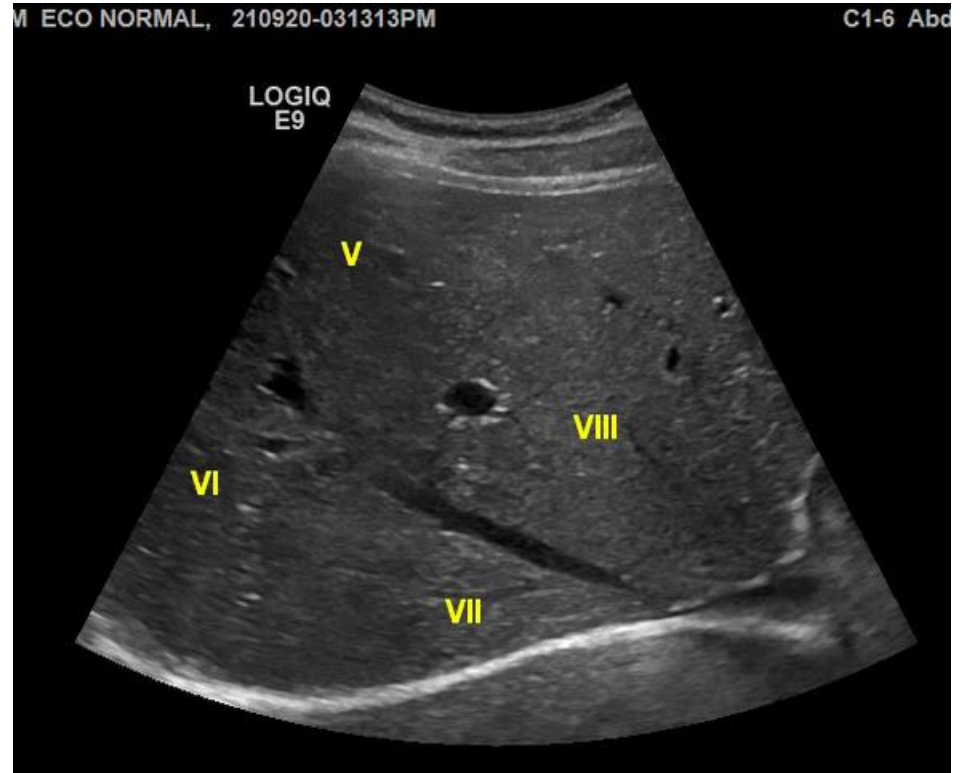
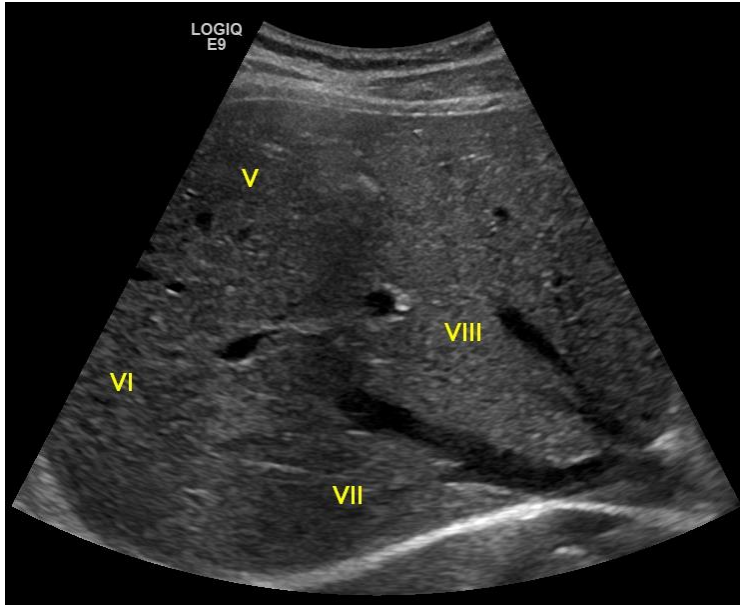
TRANSVERSE SECTION LLL



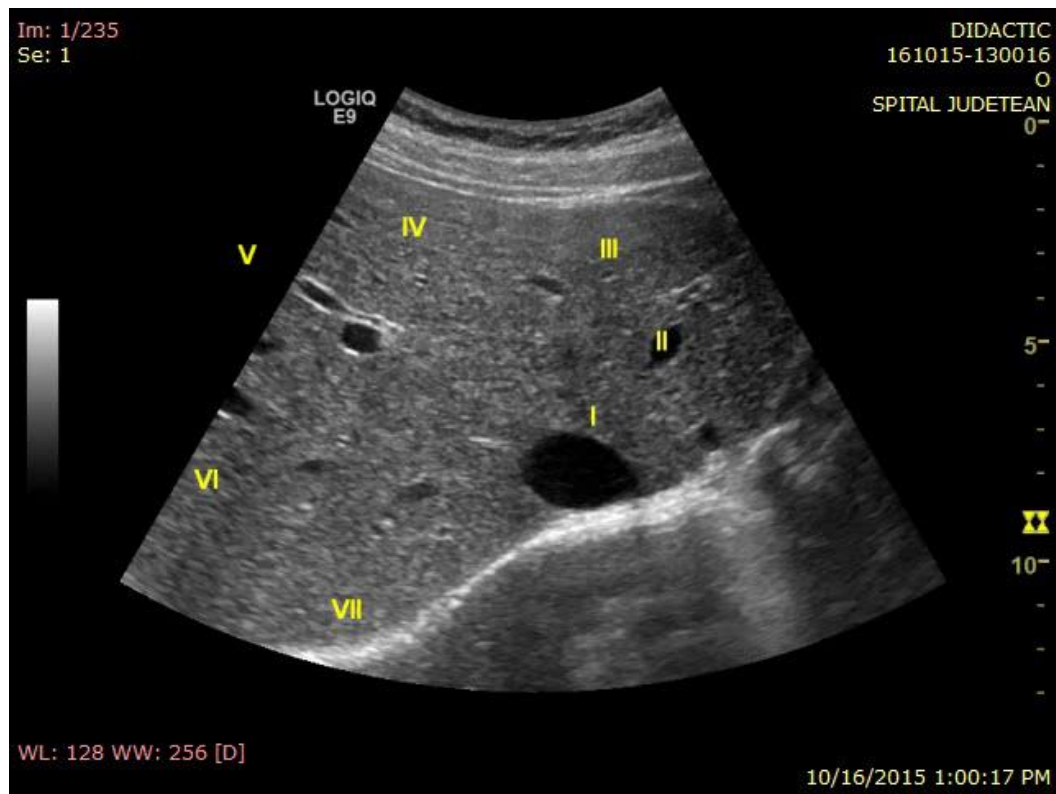
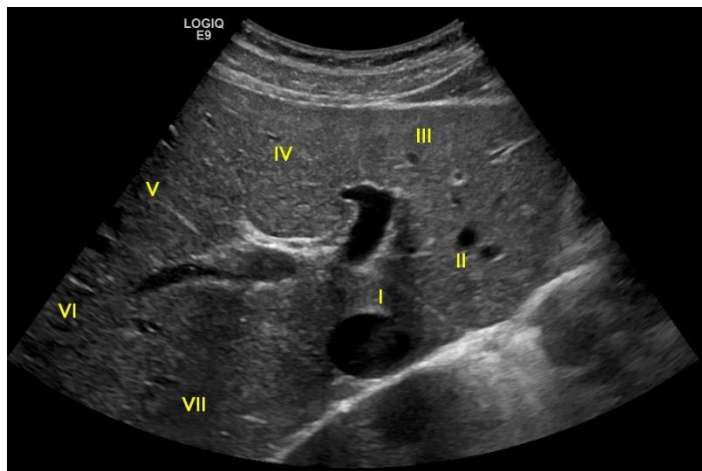
LONGITUDINAL SECTION RLL



TRANSVERSE SECTION RLL



SUBCOSTAL RIGHT OBLIQUE SECTION



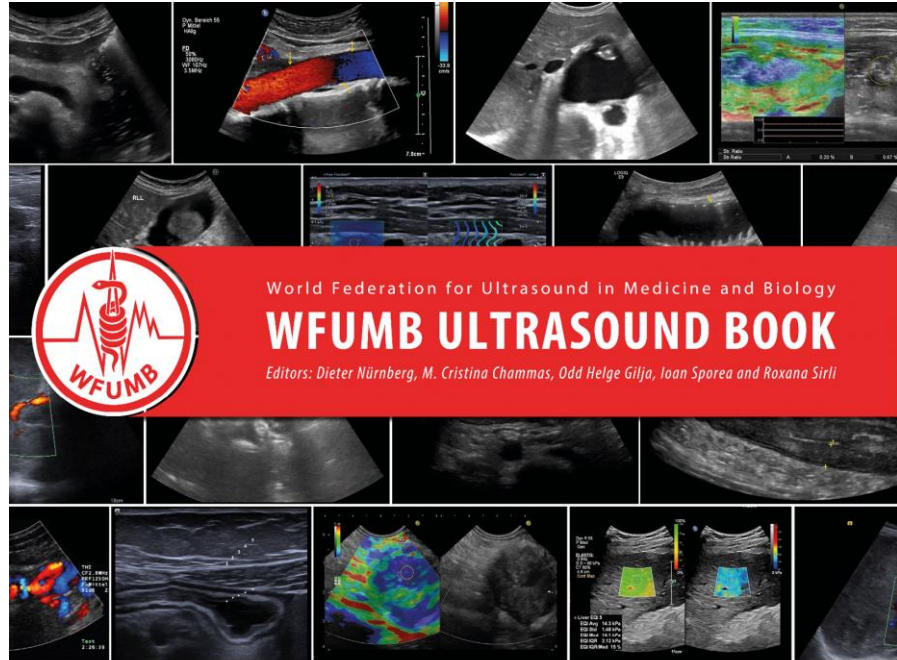
TAKE HOME MESSAGES!

- The examination of the liver require a complete, systematic sweeping of the entire liver structure in at least 2 sections, transverse and longitudinal
- Identification of vascular structures – hepatic veins and the portal vein
- Identification of the hilum structures – portal vein, main biliary duct, hepatic artery
- Characterization of liver structure - normally homogeneous

I see with sound...



What's your superpower?



<http://wfumb.info/wfumb-ultrasound-book>