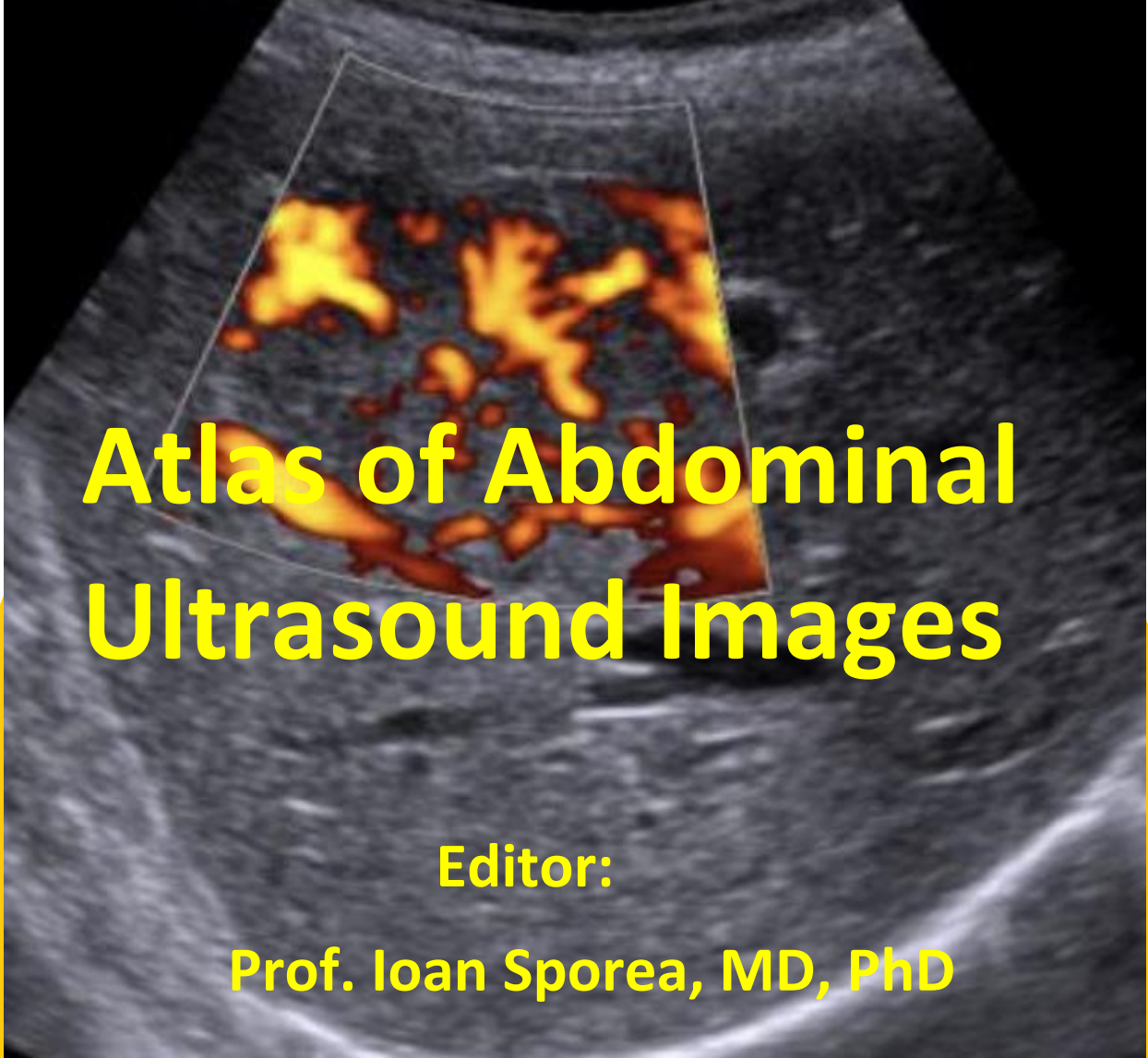




UMFT

Universitatea de
Medicină și Farmacie
„Victor Babeș”
din Timișoara



Atlas of Abdominal Ultrasound Images

Editor:

Prof. Ioan Sporea, MD, PhD



Atlas of Abdominal Ultrasound Images

Editor:

Prof. Ioan Sporea, MD, PhD

Co-authors:

Prof. Alina Popescu, MD, PhD

Prof. Roxana Şirli, MD, PhD

Mirela Dănilă, MD, PhD

Felix Bende, MD, PhD

Ana Maria Ghiuchici, MD

Ruxandra Mare, MD, PhD

Tudor Moga, MD, PhD

Editura „Victor Babeș”
Piața Eftimie Murgu nr. 2, cam. 316, 300041 Timișoara
Tel./ Fax 0256 495 210
e-mail: evb@umft.ro
www.umft.ro/editura

Director general: Prof. univ. emerit dr. Dan V. Poenaru

Colecția: MANUALE
Coordonator colecție: Prof. univ. dr. Sorin Eugen Boia

Referent științific: Prof. univ. dr. Mirela Tomescu

Indicativ CNCSIS: 324

© 2020

Toate drepturile asupra acestei ediții sunt rezervate.

Reproducerea parțială sau integrală a textului, pe orice suport, fără acordul scris al autoarelor este interzisă și se va sancționa conform legilor în vigoare.

ISBN 978-606-786-190-7

Foreword

Ultrasound is the most used imaging method and the number of procedures performed annually in the world is incredibly high. Since it is an inexpensive method, using different types of ultrasound machines (some of them portable or ultraportable) it can be used in different places, in hospital and also in outpatient medicine.

In recent years, the introduction of „point of care” ultrasound (POCUS), where US examination is performed directly in the consultation room, immediately after anamnesis and clinical exam, dramatically increased the number of medical specialties that can use ultrasound in their daily practice. A rapid, immediate imaging result enable a rapid and easier medical decision. In hospital, the ability to use ultrasound examination at bedside when needed, increase the attractiveness of this method. Furthermore, interventional procedures are mostly performed under ultrasound guidance. Development of ultrasound machines with several modern facilities, such as contrast enhanced ultrasound – CEUS, or ultrasound based elastography, and availability of several dedicated probes, led to obtaining ultrasound images of high quality and fidelity.

In the last 10 years, ultrasound became a method learned by medical students and fellows. Why? Because it can be learned in a reasonable amount of time, it is quite easy to be used in different medical locations, by many specialties and is usually loved by young people. Theoretical courses, books, and atlases of US images are needed before training on simulators or human models.

Our team has a very long history of training in abdominal ultrasound, with more than 25 years of teaching experience. We used it to collect this „Atlas of abdominal ultrasound images” which is aimed at beginners in the field of ultrasound. We started with quite simple images and videos of the normal anatomy, followed by images and videos of pathological conditions commonly found in daily practice.

However, you must have in mind that practice is very important to learn this simple method. Live demonstration on how to perform the examination should be followed by hands-on sessions. During these training sessions, anatomical sections, the normal aspect of structures and organs must be learned. It is a well-known fact that ultrasound is an operator dependent method! Thus, training, and later the experience of the examiner, play an essential role.

How many personal US examinations one should have performed before feeling confident in the field of abdominal ultrasound, is a good question. We recommend at least 300-500 personal ultrasound examinations of the abdomen! However, this number should be correlated with the personal ability. On the other hand, an abdominal examination must be always a „full” examination, meaning that all abdominal organs must be seen and evaluated and, of course, described.

Finally, I wish you success in learning this wonderful method, the source of a lot of important information for the examiner, in a very short time, much needed for the future management of a medical case.

Prof. Ioan Sporea, MD, PhD

Content

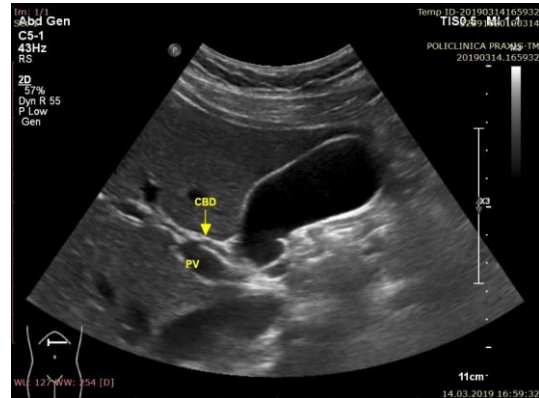
Chapter 1 - Gallbladder	6
Chapter 2 - Liver.....	19
Chapter 3 - Pancreas	43
Chapter 4 - Spleen.....	52
Chapter 5 - Gastrointestinal ultrasound (GIUS)	57
Chapter 6 - Kidneys	71
Chapter 7 - Pelvis Ultrasound	88

Chapter 1 Gallbladder

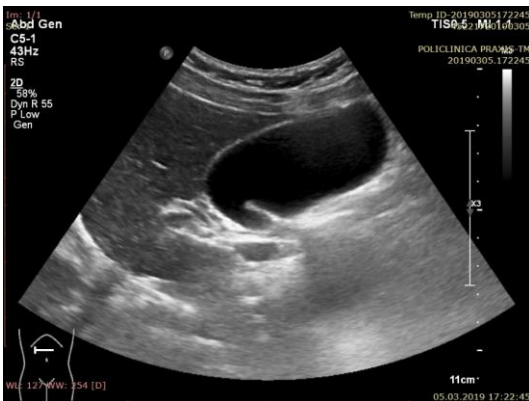
1.1. Gallbladder - normal aspects



1.1.1 Normal gallbladder: Thin hyperechoic gallbladder wall, anechoic content (longitudinal section in the right hypochondrium)



1.1.2 Normal gallbladder: Thin hyperechoic gallbladder wall, anechoic content. Normal common biliary duct (CBD) and portal vein (PV) (longitudinal section in the right hypochondrium)



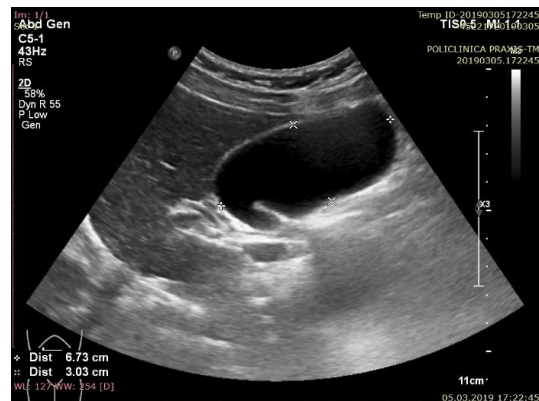
1.1.3 Normal gallbladder: Thin hyperechoic gallbladder wall, anechoic content (longitudinal section in the right hypochondrium)



1.1.4 Normal gallbladder: Thin hyperechoic gallbladder wall, anechoic content



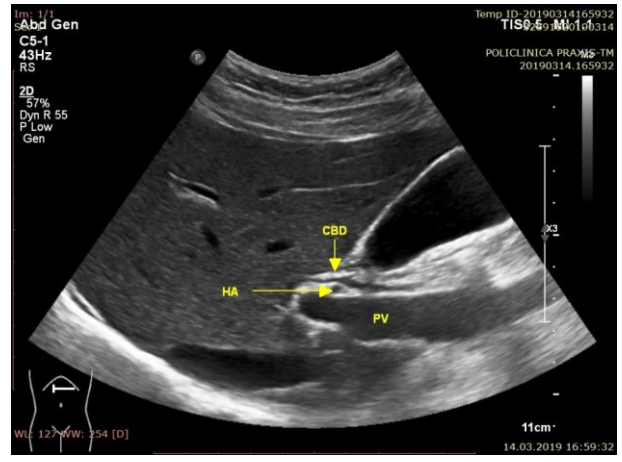
1.1.5 Normal gallbladder: Thin hyperechoic gallbladder wall, anechoic content. VP – portal vein (longitudinal section in the right hypochondrium)



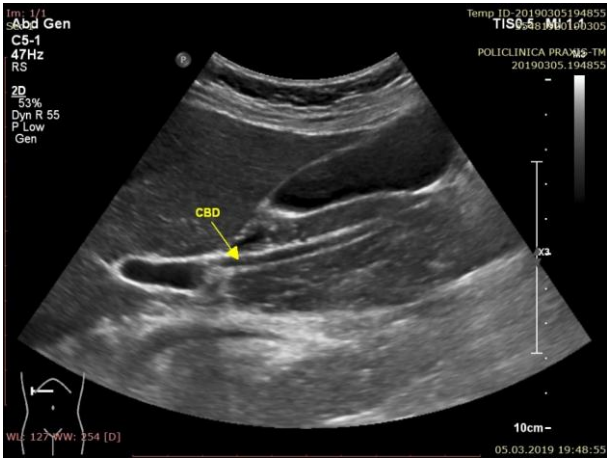
1.1.6 Normal gallbladder: normal size approx. 7/3 cm (longitudinal section in the right hypochondrium)



1.1.7 Normal gallbladder (longitudinal section in the right hypochondrium)



1.1.8 Normal gallbladder and normal common biliary duct (CBD) in front of the portal vein (PV) and hepatic artery (HA) (the hilum triad) (section perpendicular on the ribs - right hypochondrium)



1.1.9 Normal gallbladder and normal common biliary duct (CBD) (section perpendicular on the ribs - right hypochondrium)



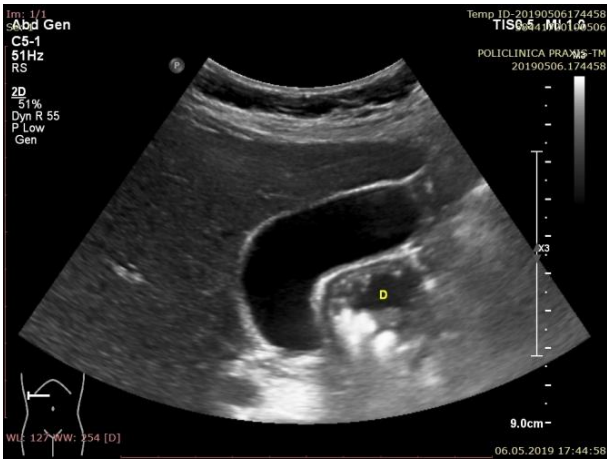
1.1.10 Normal gallbladder (longitudinal section in the right hypochondrium)



1.1.11 Normal gallbladder (longitudinal section in the right hypochondrium)



1.1.12 Normal gallbladder (longitudinal section in the right hypochondrium)



1.1.13 Normal gallbladder –the duodenum (D) with liquid and gas is visible near the gallbladder wall



1.1.14 Normal gallbladder – after meal small gallbladder, with double wall with a "sandwich" aspect



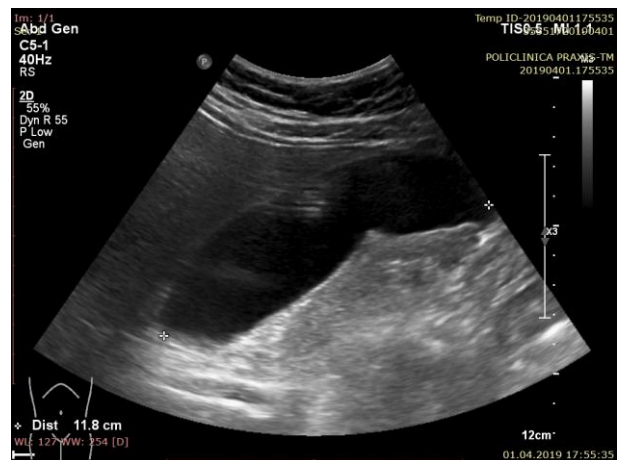
1.1.15 Normal gallbladder – after meal small gallbladder, with double wall with a "sandwich" aspect – zoomed image



1.1.16 Normal gallbladder – after meal small gallbladder with thicker walls

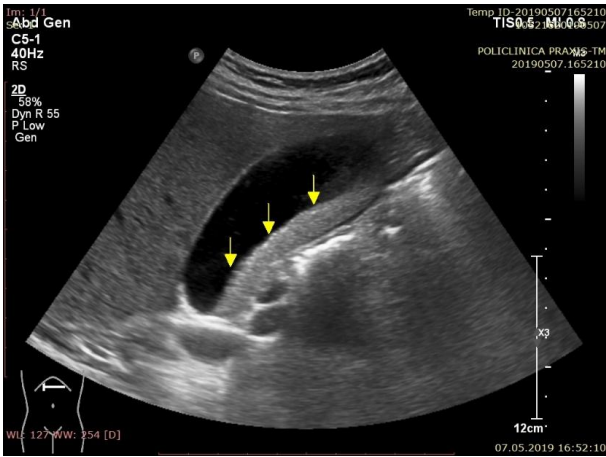


1.1.17 Normal gallbladder – large gallbladder, L – 12.5 cm, but not suggesting a blocked gallbladder; aspect found in elderly



1.1.18 Normal gallbladder – large gallbladder, L – approx. 12 cm, but not suggesting a blocked gallbladder; aspect found in elderly

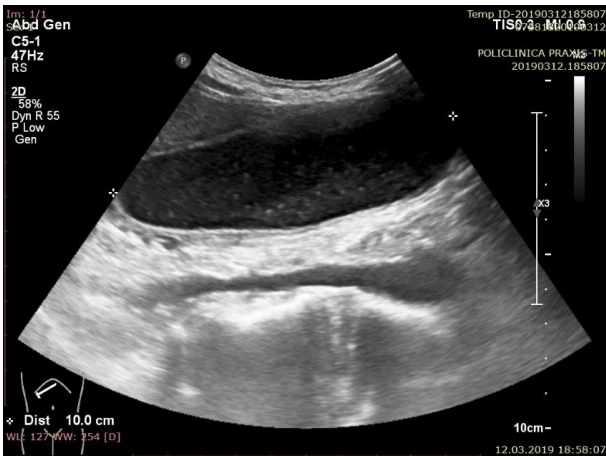
1.2. Gallbladder – gallbladder sludge and stones



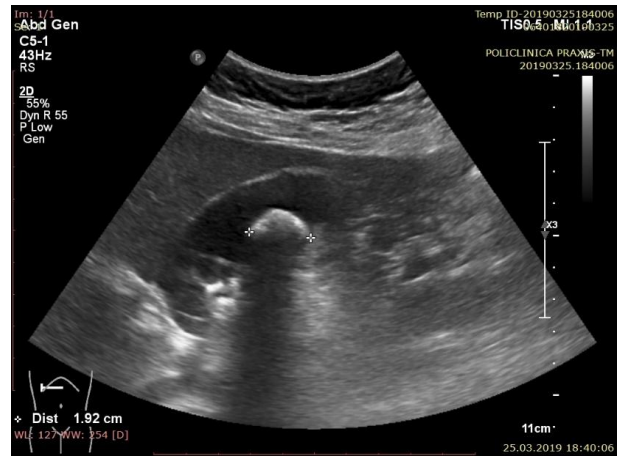
1.2.1 Biliary sludge - Hyperechoic material, homogenous, without posterior shadow, with horizontal surface, present inside the gallbladder



1.2.2 Biliary sludge - Hyperechoic material, homogenous, without posterior shadow, with horizontal surface, present inside the gallbladder



1.2.3 Biliary sludge - Echoic material, without posterior shadow inside the gallbladder



1.2.4 Gallbladder stone: hyperechoic gallbladder stone, approx. 2 cm in size, with posterior shadow



1.2.5 Gallbladder stone: hyperechoic gallbladder stone, approx. 2.3 cm in size, with posterior shadow



1.2.6 Gallbladder stone: hyperechoic stone, approx. 2 cm in size, with posterior shadow; in a small contracted gallbladder



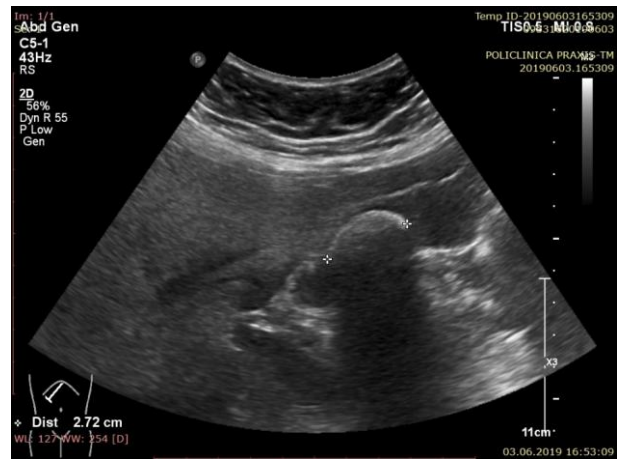
1.2.7 Gallbladder stone: hyperechoic gallbladder stone, approx. 2.3 cm in size, with posterior shadow



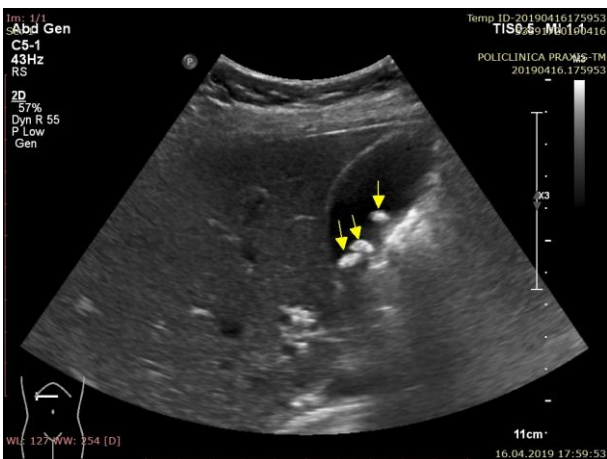
1.2.8 Gallbladder stone: hyperechoic small gallbladder stone, approx. 7 mm in size, with no evident posterior shadow



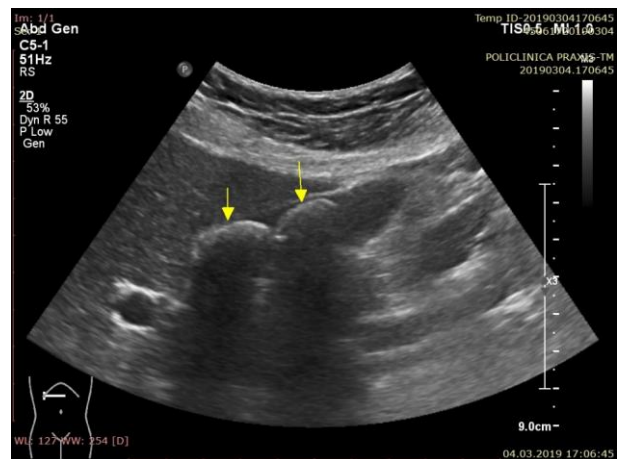
1.2.9 Gallbladder stone: hyperechoic stone, approx. 2 cm in size, with posterior shadow; in a small contracted gallbladder



1.2.10 Gallbladder stone: hyperechoic gallbladder stone, approx. 3 cm in size, with posterior shadow



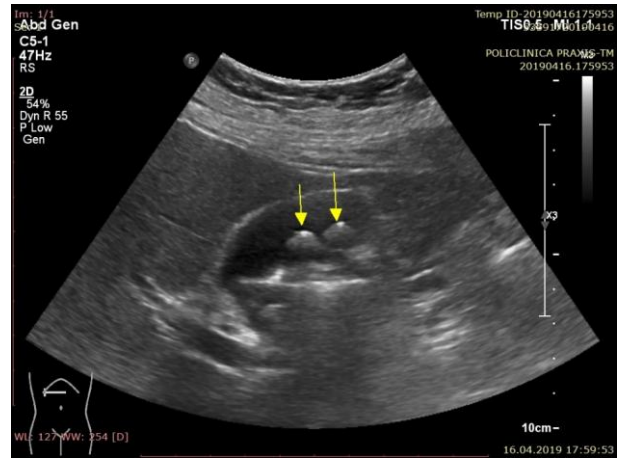
1.2.11 Gallbladder stones: Three hyperechoic images in the gallbladder, approx. 5 mm in size each, without evident posterior shadow



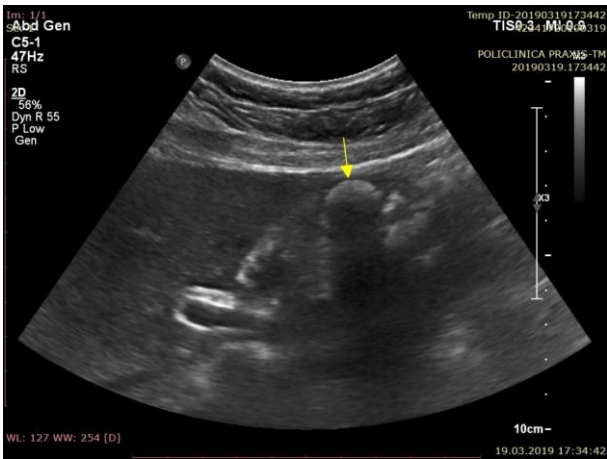
1.2.12 Gallbladder stones: Two hyperechoic large stones in the gallbladder, approx. 1.5 mm in size each, with posterior shadow



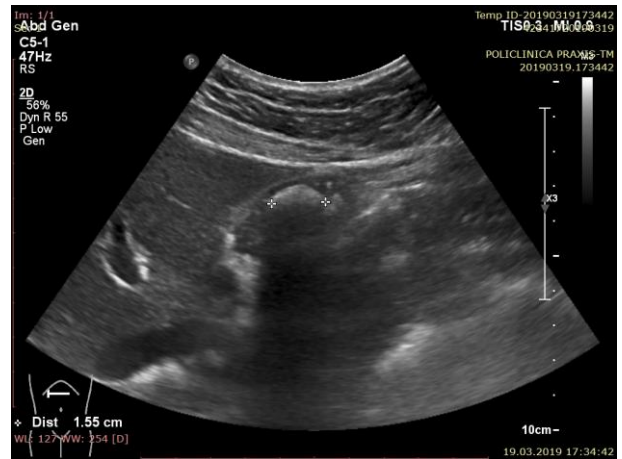
1.2.13 Gallbladder stones: multiple hyperechoic images in the gallbladder with posterior shadow



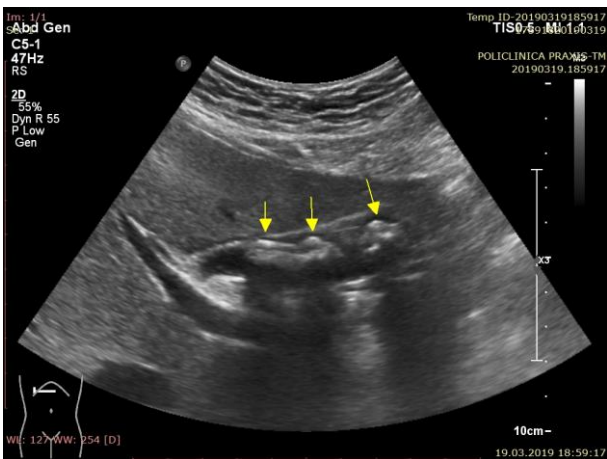
1.2.14 Gallbladder stones: two hyperechoic images in the gallbladder, with posterior shadow



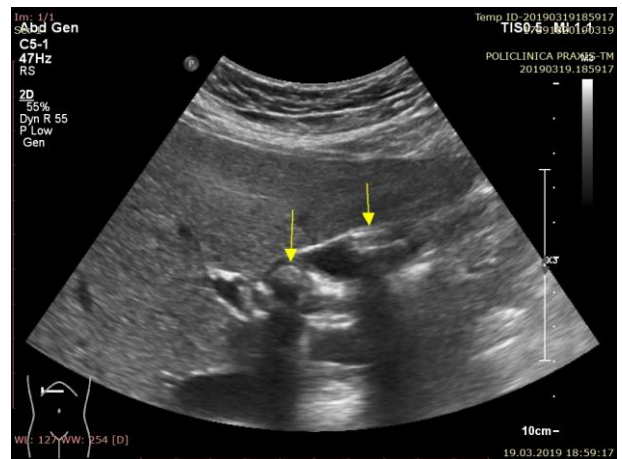
1.2.15 Gallbladder stone: hyperechoic image, approx. 1 cm in size, with posterior shadow; in a contracted gallbladder



1.2.16 Gallbladder stone: hyperechoic image, approx. 1.5 cm in size, with posterior shadow; in a contracted gallbladder



1.2.17 Gallbladder stones: multiple hyperechoic images in the gallbladder, with posterior shadow



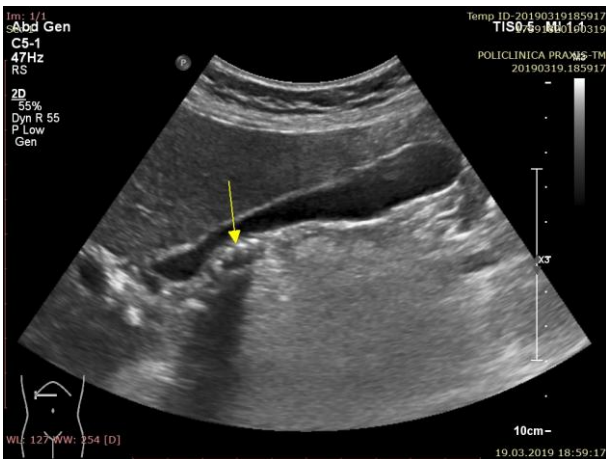
1.2.18 Gallbladder stones: multiple hyperechoic images in the gallbladder, with posterior shadow



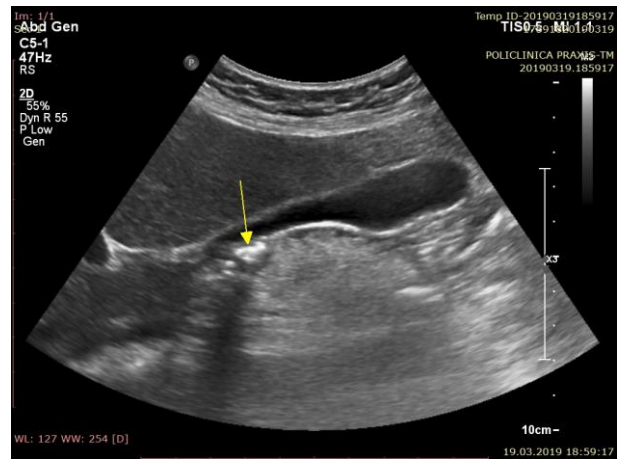
1.2.19 Gallbladder stone: hyperechoic image with posterior shadow in the infundibulum of the gallbladder



1.2.20 Gallbladder stone: hyperechoic approx. 2 cm in size image with posterior shadow in the infundibulum of the gallbladder



1.2.21 False image of a gallbladder stone created by the gas in the duodenum



1.2.22 False image of a gallbladder stone created by the gas in the duodenum



1.2.23 Hyperechoic images with posterior shadow in a gallbladder with thick wall, suggestive for liver cirrhosis

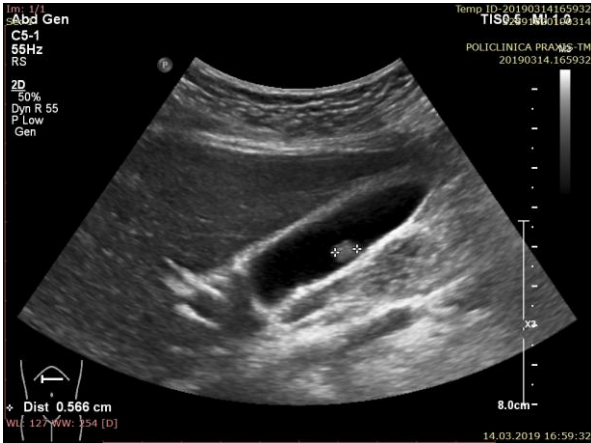


1.2.24 Hyperechoic images with posterior shadow in a gallbladder with thick wall, suggestive for liver cirrhosis

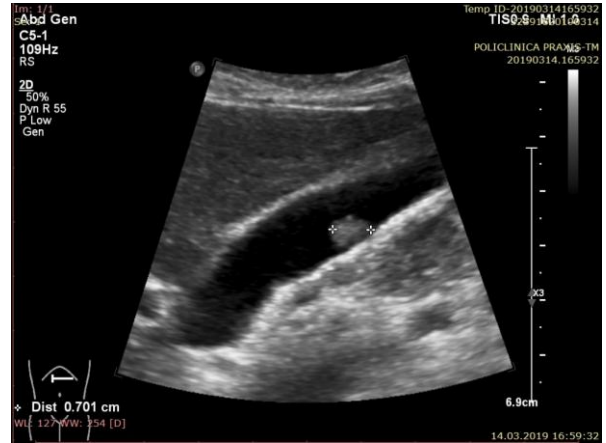


1.2.25 Hyperechoic images with posterior shadow in a gallbladder with thick wall, suggestive for liver cirrhosis

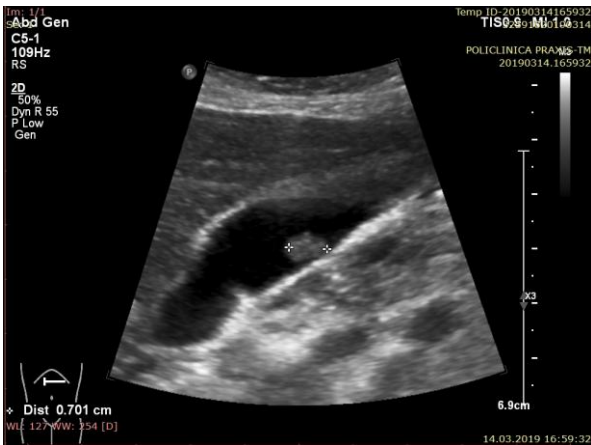
1.3. Gallbladder – gallbladder polyps



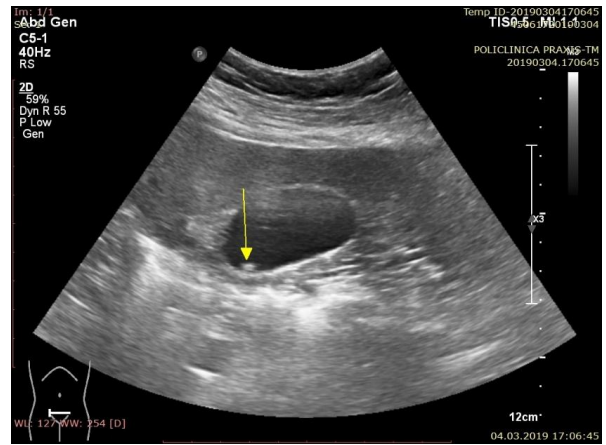
1.3.1 Adenomatous polyp: hyperechoic image inside the gallbladder, attached to the gallbladder wall, without posterior shadow



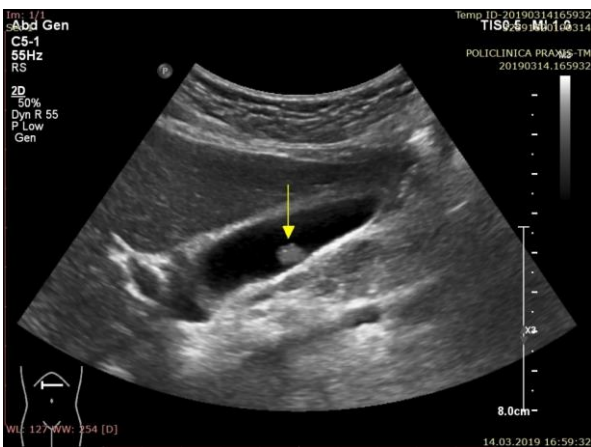
1.3.2 Adenomatous polyp: hyperechoic image inside the gallbladder, attached to the gallbladder wall, without posterior shadow – zoomed image



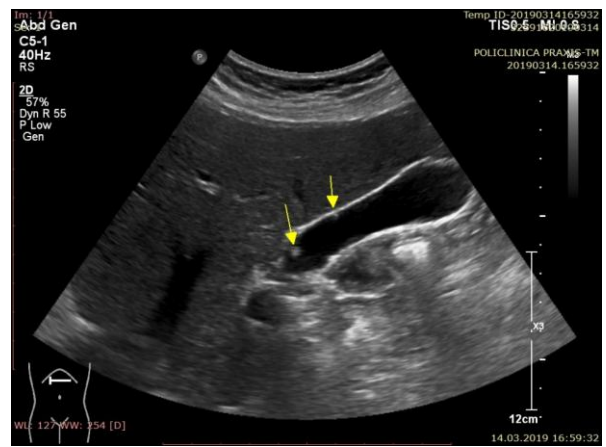
1.3.3 Adenomatous polyp: hyperechoic image inside the gallbladder, attached to the gallbladder wall, without posterior shadow – zoomed image



1.3.4 Adenomatous polyp: small hyperechoic image inside the gallbladder, attached to the gallbladder wall, without posterior shadow



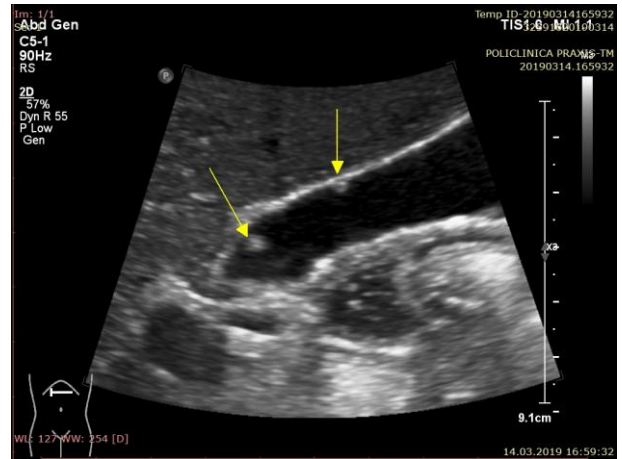
1.3.5 Adenomatous polyp: hyperechoic image inside the gallbladder, attached to the gallbladder wall, without posterior shadow



1.3.6 Adenomatous polyps: several small hyperechoic images inside the gallbladder, attached to the gallbladder wall, without posterior shadow



1.3.7 Adenomatous polyps: several small hyperechoic images inside the gallbladder, attached to the gallbladder wall, without posterior shadow, their echogenicity similar with the echogenicity of the wall – zoomed image



1.3.8 Adenomatous polyps: several small hyperechoic images inside the gallbladder, attached to the gallbladder wall, without posterior shadow their echogenicity similar with the echogenicity of the wall – zoomed image



1.3.9 Adenomyomatosis: multiple very small polyps attached to the entire gallbladder wall

1.4. Gallbladder – video images

Video 1.4.1 Normal gallbladder, transonic content and thin hyperechoic wall	https://youtu.be/WLhDg3n9-zQ
Video 1.4.2 Normal gallbladder, transonic content and thin hyperechoic wall, visible normal common biliary duct (CBD) in front of the portal vein (PV) and hepatic artery (HA) (the hilum triad)	https://youtu.be/VMf4syyg0Rc
Video 1.4.3 Normal gallbladder –the duodenum with liquid and gas visible near the thin hyperechoic gallbladder wall	https://youtu.be/epMuSPuJSIU
Video 1.4.4 Normal gallbladder – after meal small gallbladder, with double wall with a "sandwich" aspect	https://youtu.be/xe_Z7jw5b0Y
Video 1.4.5 Normal gallbladder – after meal small gallbladder, with double wall with a "sandwich" aspect – zoomed image	https://youtu.be/gvpy6O3ZYrA
Video 1.4.6 Normal gallbladder – after meal small gallbladder, with double wall with a "sandwich" aspect	https://youtu.be/i8g6iPUcqhg
Video 1.4.7 Biliary sludge - Hyperechoic material, homogenous, without posterior shadow, present inside the gallbladder	https://youtu.be/D2MYid-zfHw
Video 1.4.8 Biliary sludge - Echoic material, without posterior shadow inside a large gallbladder	https://youtu.be/fEaVmSCU6yg
Video 1.4.9 Biliary sludge - Hyperechoic material, homogenous, without posterior shadow, present inside the gallbladder	https://youtu.be/yuijr4D71pQ
Video 1.4.10 Gallbladder stones: 2 hyperechoic images in the gallbladder, with posterior shadow	https://youtu.be/1kFZpoD-QQs
Video 1.4.11 Gallbladder stones: multiple hyperechoic images in the gallbladder, different sizes, with posterior shadow	https://youtu.be/KJwvl2vv5bw
Video 1.4.12 Gallbladder stones: multiple hyperechoic images in the gallbladder, with posterior shadow	https://youtu.be/ncSXdo6NZVM
Video 1.4.13 Gallbladder stones: multiple hyperechoic images with posterior shadow in a small contracted gallbladder	https://youtu.be/jb3ZU73xn5k
Video 1.4.14 Gallbladder stones: multiple hyperechoic images with posterior shadow, different sizes, in a small, contracted gallbladder	https://youtu.be/sFiYXm-hssc

Video 1.4.15 Gallbladder stones: multiple hyperechoic images with posterior shadow, different sizes, in a small contracted gallbladder	https://youtu.be/sbvEjZgcp8A
Video 1.4.16 Gallbladder stones: multiple hyperechoic images with posterior shadow, different sizes, in a small contracted gallbladder	https://youtu.be/RfhTzMYwkDI
Video 1.4.17 Gallbladder stones: multiple hyperechoic images with posterior shadowing the gallbladder	https://youtu.be/KZR8Gj4pJs0
Video 1.4.18 Gallbladder stone: large hyperechoic image with posterior shadow in the gallbladder	https://youtu.be/SVVBXMqoV-g
Video 1.4.19 Gallbladder stone: hyperechoic image with posterior shadow in a small contracted gallbladder	https://youtu.be/K1Sb6iilQks
Video 1.4.20 Gallbladder stone: hyperechoic image with posterior shadow in a small contracted gallbladder	https://youtu.be/7gADLqB1Wk8
Video 1.4.21 Gallbladder stone: hyperechoic image with posterior shadow in the gallbladder	https://youtu.be/ky0UIxRIWHQ
Video 1.4.22 Gallbladder stones: multiple hyperechoic images with posterior shadowing the gallbladder	https://youtu.be/cWDz1y1UUKw
Video 1.4.23 Gallbladder stones: 2 hyperechoic images with posterior shadowing the gallbladder	https://youtu.be/pPYfu9KHk7A
Video 1.4.24 Gallbladder stones: 2 hyperechoic images with posterior shadowing the gallbladder	https://youtu.be/RWNCsoWkLis
Video 1.4.25 Gallbladder stones: multiple hyperechoic images with posterior shadowing the gallbladder	https://youtu.be/opAwMR_-O7k
Video 1.4.26 Gallbladder stone: hyperechoic image with posterior shadow in the infundibulum of the gallbladder	https://youtu.be/_trBcG5IC4A
Video 1.4.27 Gallbladder stone: hyperechoic image with posterior shadow in the infundibulum of the gallbladder	https://youtu.be/r04NSE9WiIM
Video 1.4.28 Gallbladder stone: hyperechoic image with posterior shadow in the infundibulum of a large gallbladder	https://youtu.be/JGAip_tIFWw
Video 1.4.29 Hyperechoic images with posterior shadow in the gallbladder with thick wall, suggestive for liver cirrhosis	https://youtu.be/fpxD2onFIlw
Video 1.4.30 Hyperechoic images with posterior shadow in the gallbladder with thick wall, suggestive for liver cirrhosis	https://youtu.be/jUVtFK9WErA

Video 1.4.31 Large gallbladder suggestive for Courvoisier-Terrier sign	https://youtu.be/zvUvcmaX8W8
Video 1.4.32 Large gallbladder with multiple small hyperechoic images inside and thick double wall suggestive for acute cholecystitis	https://youtu.be/u_IU4AdvEfw
Video 1.4.33 Large gallbladder with multiple small hyperechoic images inside and very thick double wall suggestive for acute cholecystitis	https://youtu.be/5UqDoPYJTxE
Video 1.4.34 Large gallbladder with 2 hyperechoic images inside, one in the infundibulum, and thick double wall suggestive for acute cholecystitis	https://youtu.be/1Kqi6rnXSKs
Video 1.4.35 Adenomatous polyp: hyperechoic image inside the gallbladder, attached to the gallbladder wall, without posterior shadow	https://youtu.be/0DRQ5ZyY1Ow
Video 1.4.36 Adenomatous polyp: hyperechoic image inside the gallbladder, attached to the gallbladder wall, without posterior shadow	https://youtu.be/bd8PqRpXZiU
Video 1.4.37 Adenomatous polyp: hyperechoic image inside the gallbladder, attached to the gallbladder wall, without posterior shadow, approx. 1 cm in size	https://youtu.be/k5JJtiy2g8E
Video 1.4.38 Gallbladder tumor: the gallbladder is replaced by a inhomogeneous tumor that contains a stone inside	https://youtu.be/sGXB4Ac0gNY
Video 1.4.39 Gallbladder tumor: the gallbladder is replaced by a inhomogeneous tumor that contains a stone inside; 3 hypoechoic images in the liver parenchyma suggestive for liver metastases	https://youtu.be/d5R4wk1AN6s

Chapter 2 - Liver

2.1 Liver - Diffuse liver diseases

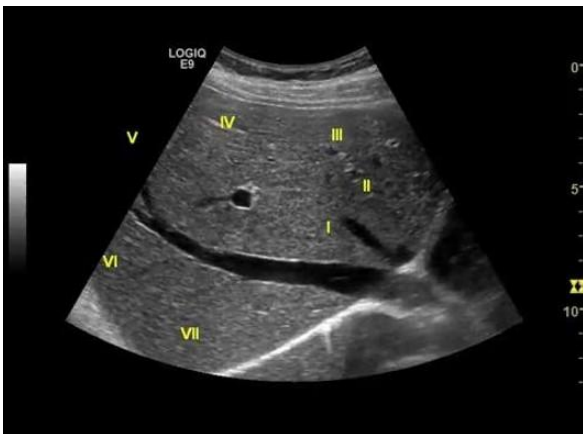
2.1.1 Normal liver and liver steatosis



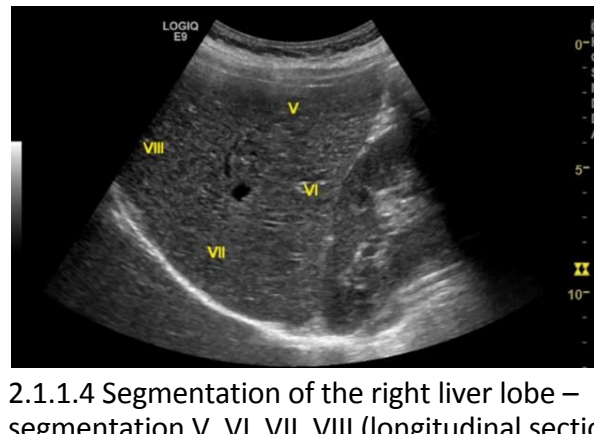
2.1.1.1 Normal liver – homogenous aspect of the liver (subcostal section)



2.1.1.2 Normal liver- left hepatic lobe segmentation (segments I, II, III) sagittal section



2.1.1.3 Segmentation of the liver – segments I, II, III, IV, V, VI, VII (subcostal section)



2.1.1.4 Segmentation of the right liver lobe – segmentation V, VI, VII, VIII (longitudinal section)



2.1.1.5 Normal aspect of the liver - same echogenicity of the liver when compared to the renal cortex; diaphragm visible (longitudinal section through the right lobe of the liver)



2.1.1.6 Mild steatosis - slightly increased echogenicity of the liver; blood vessels/diaphragm in view (subcostal section)



2.1.1.7 Mild steatosis - slightly increased echogenicity of the liver when compared to the renal cortex; diaphragm visible (longitudinal section through the right lobe of the liver)



2.1.1.8 Moderate steatosis - clear increased echogenicity of the liver parenchyma, impaired visualization of intrahepatic vascular anatomy (subcostal section)



2.1.1.9 Moderate steatosis- hyperechoic liver with moderate posterior attenuation, diaphragm still visible (subcostal section)



2.1.1.10 Moderate steatosis - hyperechoic liver with important posterior attenuation, poor penetration and visualization of intrahepatic vascular anatomy, diaphragm still visible (subcostal section)

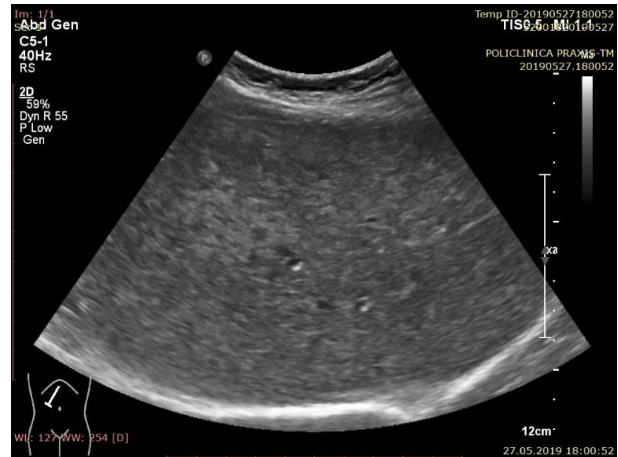


2.1.1.11 Severe steatosis -marked increased echogenicity, poor penetration and visualization of intrahepatic vascular anatomy and diaphragm, diaphragm almost invisible (subcostal section)

2.1.2 Chronic hepatitis



2.1.2.1 Acute hepatitis- slightly hypoechoic liver and gallbladder with doubled wall (longitudinal section)



2.1.2.2 Chronic hepatitis: slightly modified hypoechoic structure (subcostal section in the right hypochondria)

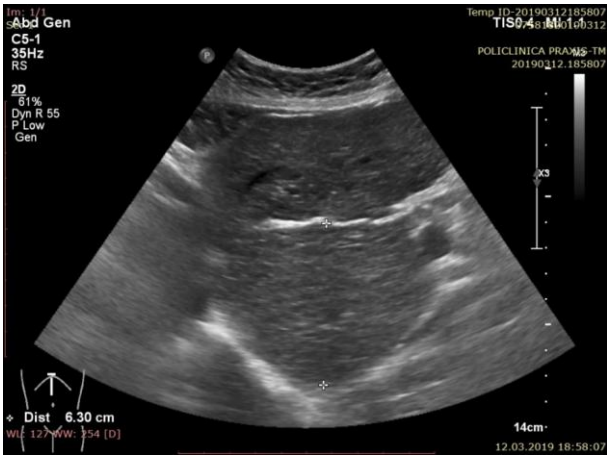
2.1.3 Liver cirrhosis



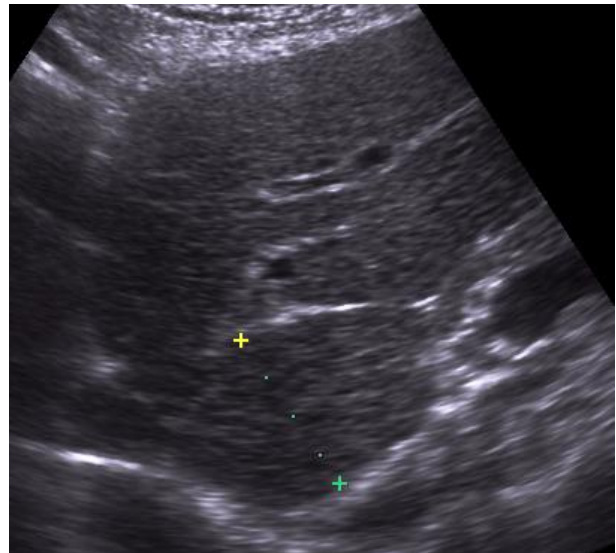
2.1.3.1 Liver cirrhosis - heterogeneous liver (subcostal section)



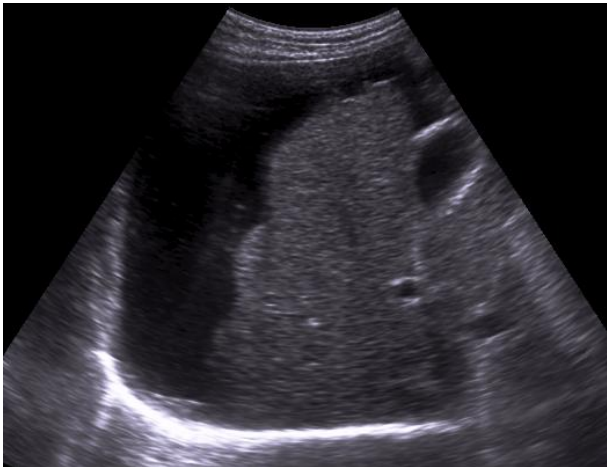
2.1.3.2 Liver Cirrhosis- heterogeneous liver (subcostal section)



2.1.3.3 Liver Cirrhosis-enlarged caudate lobe (longitudinal section through left lobe)



2.1.3.4 Liver cirrhosis - enlarged caudate lobe (longitudinal section)



2.1.3.5 Liver cirrhosis and ascites – irregular surface of the liver surrounded by an anechoic structure



2.1.3.6 Liver cirrhosis and ascites – heterogeneous liver with irregular surface surrounded by an anechoic structure



2.1.3.7 Cardiac liver cirrhosis and perihepatic ascites – heterogeneous liver with enlarged hepatic veins, surrounded by ascites (anechoic image)



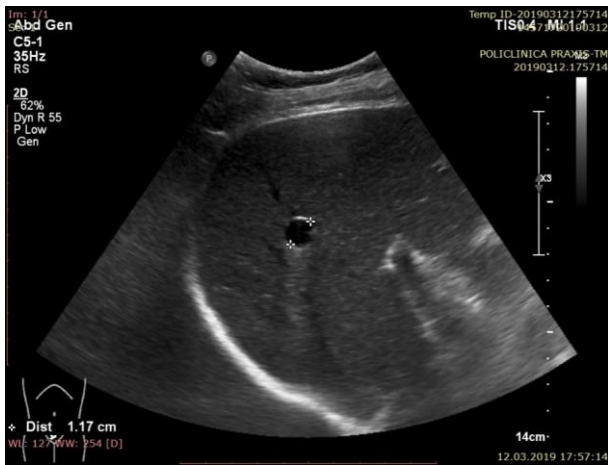
2.1.3.8 Liver cirrhosis with re-permeation of the para-umbilical vein – Sign of portal hypertension

2.1.4 Liver diffuse diseases – video images

Video 2.1.4.1 Liver steatosis: hyperechoic liver as compared with the renal cortex	https://youtu.be/Ju0Z11viSHs
Video 2.1.4.2 Mild liver steatosis: slightly increased echogenicity of the liver; blood vessels/diaphragm in view (subcostal section)	https://youtu.be/ZXmtTw07NPc
Video 2.1.4.3 Moderate liver steatosis: clear increased echogenicity of the liver parenchyma, impaired visualization of intrahepatic vascular anatomy and moderate posterior attenuation (subcostal section)	https://youtu.be/3NMzFW6xIso
Video 2.1.4.4 Severe steatosis: hyperechoic liver with important posterior attenuation, poor penetration and visualization of intrahepatic vascular anatomy and diaphragm (subcostal section)	https://youtu.be/-v7Lyxp2IDE
Video 2.1.4.5 Chronic hepatitis: slightly modified hypoechoic structure (subcostal section in the right hypochondria)	https://youtu.be/dGO8C_q0k4Y
Video 2.1.4.6 Chronic hepatitis: slightly modified hypoechoic structure (intercostal section)	https://youtu.be/6geO9-hsllc
Video 2.1.4.7 Chronic hepatitis: slightly modified hypoechoic structure (longitudinal section)	https://youtu.be/pvZ1P9a9r-0
Video 2.1.4.8 Liver cirrhosis: heterogeneous structure of the liver with the visualization of the portal hilum and right portal branch (subcostal section)	https://youtu.be/LpygmJgHLEs
Video 2.1.4.9 Liver cirrhosis: heterogeneous liver with increased size of portal bifurcation and dilated hepatic veins	https://youtu.be/a522YY0X6Vg
Video 2.1.4.10 Cardiac cirrhosis: homogenous liver with enlarged hepatic veins	https://youtu.be/UtOY7uzz6T4
Video 2.1.4.11 Liver cirrhosis- irregular surface of the liver surrounded by ascites (anechoic image)	https://youtu.be/OchVN9epGho
Video 2.1.4.12 Liver cirrhosis with re-permeation of the para-umbilical vein (longitudinal section)	https://youtu.be/OP_SpTB_qoY
Video 2.1.4.13 Liver cirrhosis with re-permeation of the para-umbilical - starting from the left branch of the portal vein, where a vascular (Doppler image) cord starts, continuing to the lower margin of the liver and then on the posterior face of the abdomen towards the umbilicus	https://youtu.be/mSU3tcVQHe
Video 2.1.4.14 Liver cirrhosis with enlargement of quadrate lobe – heterogeneous liver with irregular surface	https://youtu.be/xuRJ9HNaCmw

2.2 Focal liver lesions

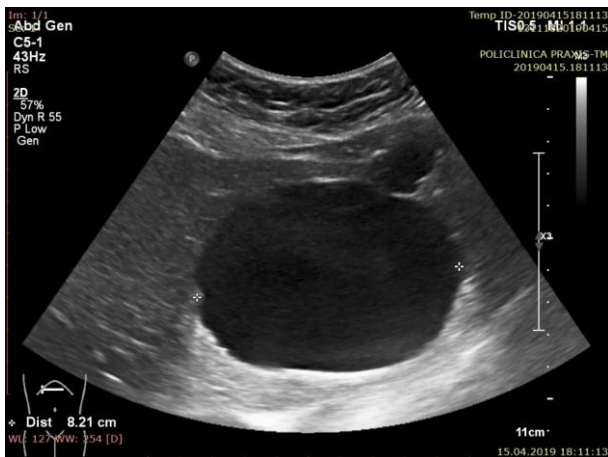
2.2.1 Simple liver cysts (biliary cyst) and hydatid hepatic cysts



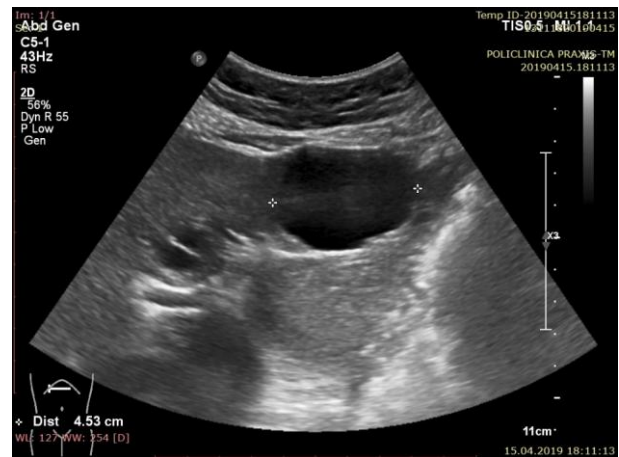
2.2.1.1 Simple liver cyst: a small anechoic lesion with thin wall and posterior enhancement



2.2.1.2 Simple liver cyst: a small anechoic lesion with thin wall and posterior enhancement



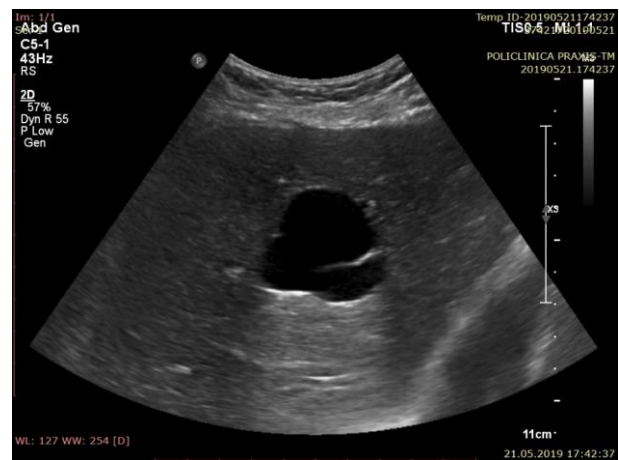
2.2.1.3 Simple liver cyst: a large anechoic lesion with thin wall and posterior enhancement



2.2.1.4 Simple liver cyst: a large anechoic lesion with thin wall



2.2.1.5 Simple liver cyst: a large anechoic lesion with thin wall



2.2.1.6 Biliary cyst: anechoic lesion with thin wall, geographic contour, posterior enhancement and septa



2.2.1.7 Biliary cyst: anechoic lesion with thin wall, geographic contour, posterior enhancement and septa



2.2.1.10 Hydatid cyst with detached proligerous membrane



2.2.1.8 Polycystic liver



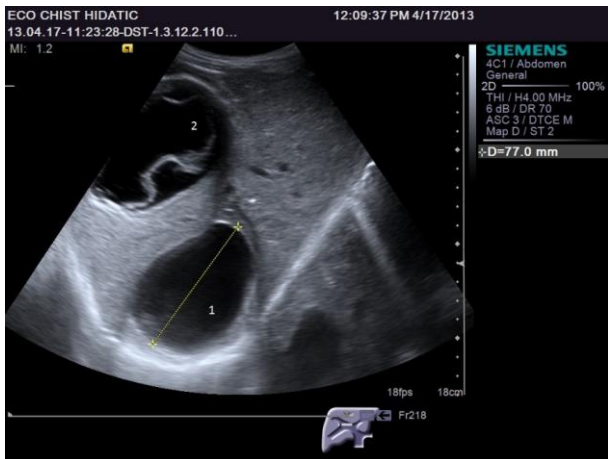
2.2.1.11 Hydatid cyst with detached proligerous membrane



2.2.1.9 Young hydatid cyst: thick, well defined wall



2.2.1.12 Hydatid matrix

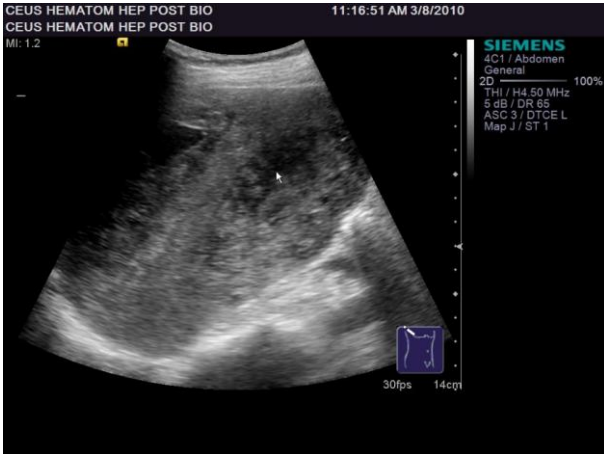


2.2.1.13 Hydatid cyst in the liver: cyst no 1- Young hydatid cyst: thick, well defined wall, cyst no 2 Hydatid cyst with detached proligerous membrane



2.2.1.14 Old hydatid calcified cyst.

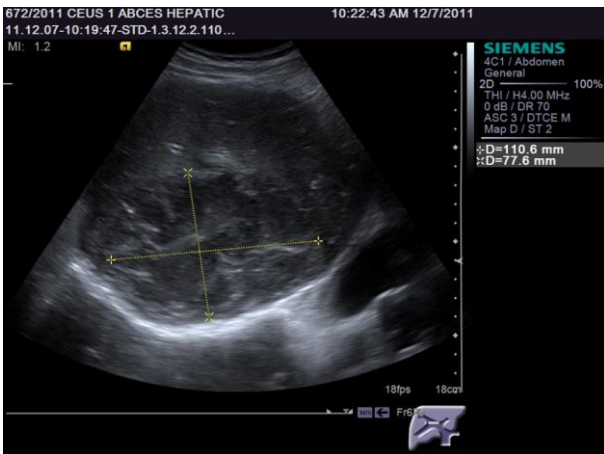
2.2.2 Liver hematoma and liver abscess



2.2.2.1 Intrahepatic hematoma: a large hypoechoic, inhomogeneous liver mass



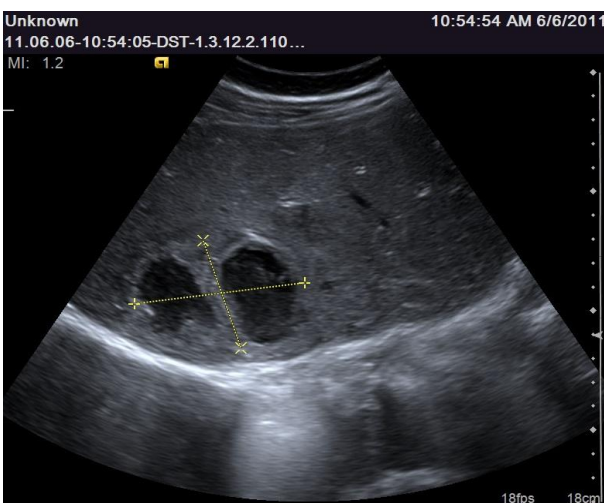
2.2.2.2 Intrahepatic hematoma: a hypoechoic, inhomogeneous liver mass with anechoic components and pleural effusion



2.2.2.3 Liver abscess: a large hypoechoic, inhomogeneous liver mass, poorly delimited in a septic state

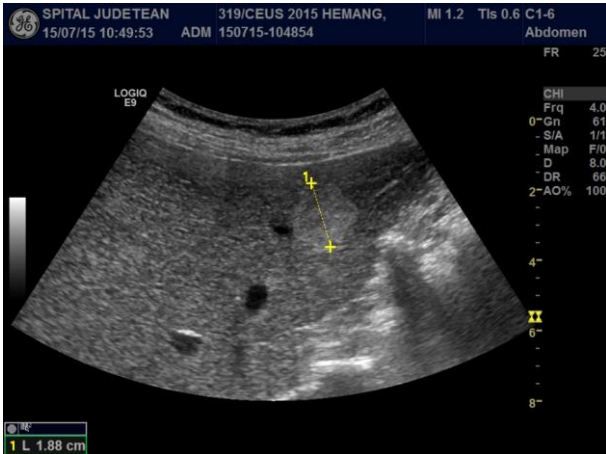


2.2.2.4 Liver abscess: a hypoechoic, inhomogeneous liver mass with anechoic component and posterior enhancement in a septic state



2.2.2.5 Liver abscess: a hypoechoic, inhomogeneous liver mass with anechoic component in a septic state

2.2.3 Benign hepatic tumors: hemangioma, focal nodular hyperplasia (FNH) and adenoma



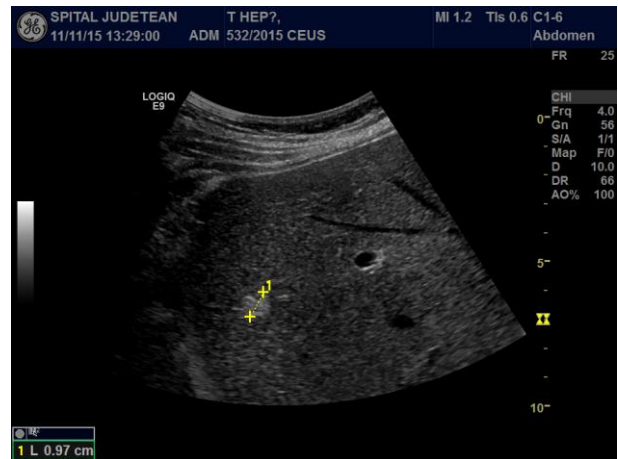
2.2.3.1 Typical hemangioma: a homogeneous, hyperechoic, well delimited mass



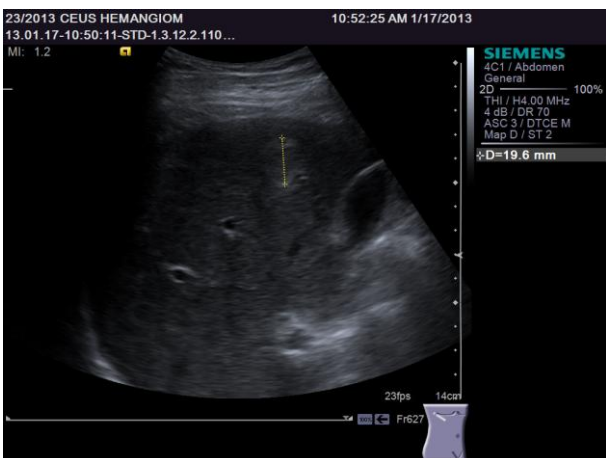
2.2.3.2 Typical hemangioma a homogeneous, hyperechoic, well delimited small liver mass



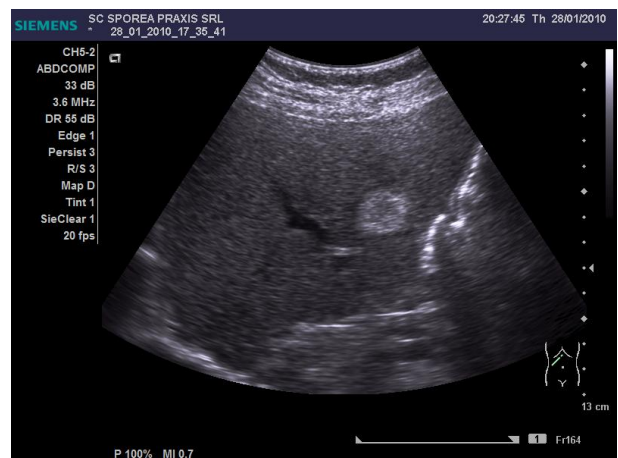
2.2.3.3 Liver hemangioma with posterior enhancement



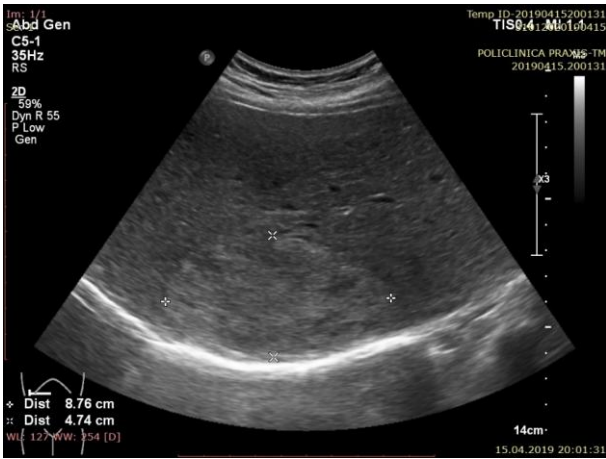
2.2.3.4 Typical hemangioma: a homogeneous, hyperechoic, small, well delimited mass



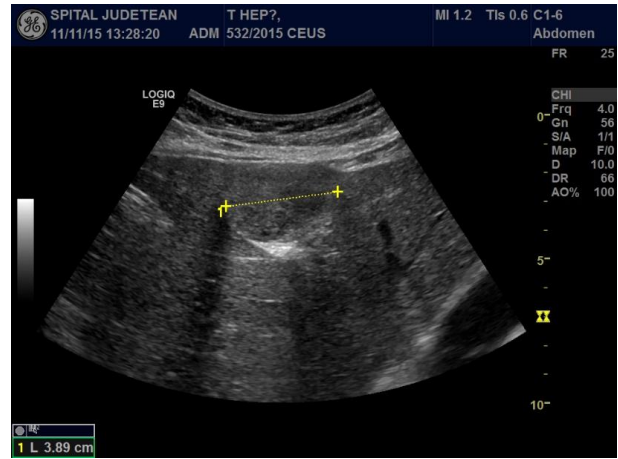
2.2.3.5 Typical hemangioma: a homogeneous, slightly hyperechoic, well delimited mass



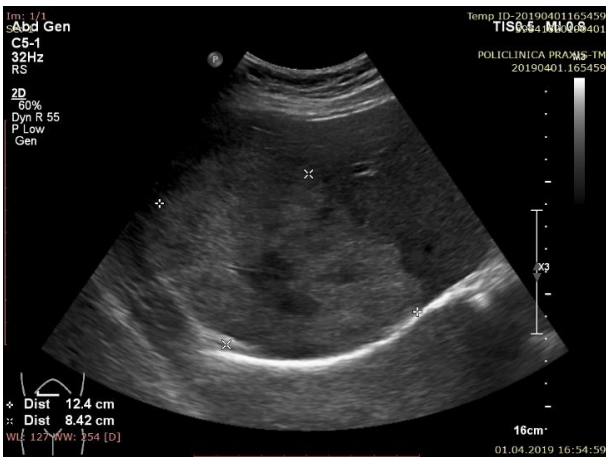
2.2.3.6 Typical hemangioma: a homogeneous, hyperechoic, small, well delimited mass



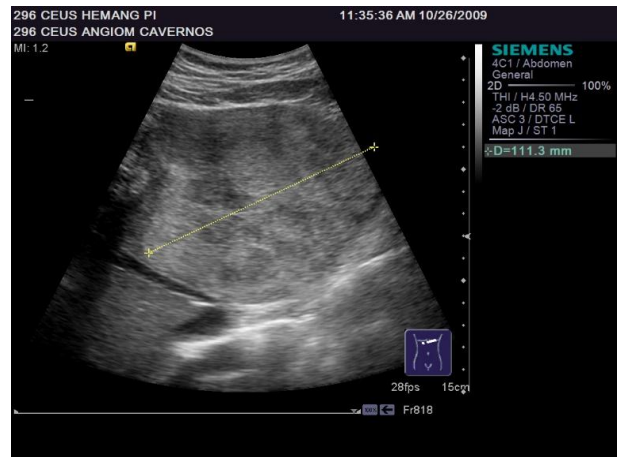
2.2.3.7 Atypical hemangioma: a slightly hyperechoic, inhomogeneous, well delimited larger liver mass



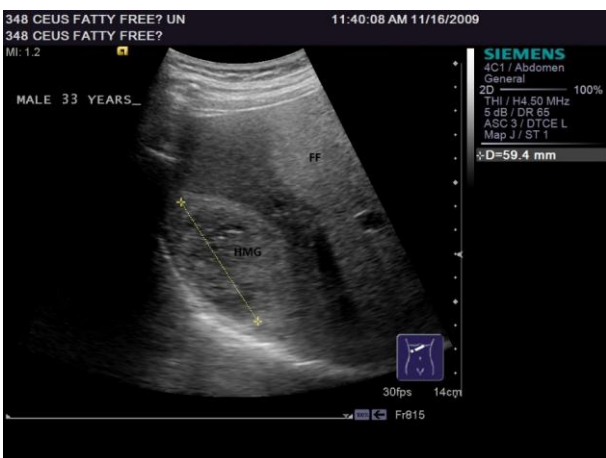
2.2.3.8 Atypical hemangioma: an isoechoic, well delimited liver mass



2.2.3.9 Atypical hemangioma: a hyperechoic, inhomogeneous, well delimited larger liver mass



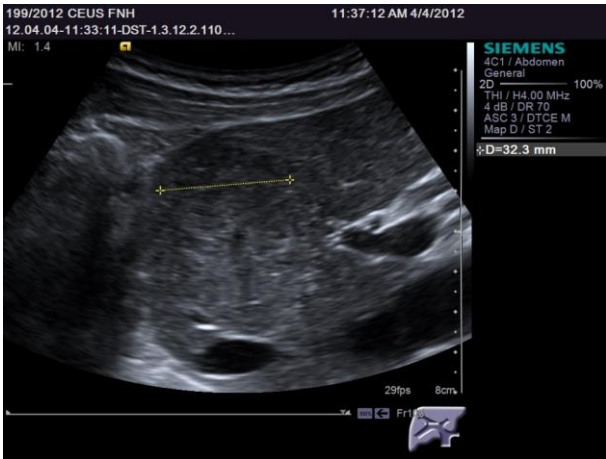
2.2.3.10 Atypical hemangioma: a hyperechoic, inhomogeneous, well delimited larger liver mass in the LHL



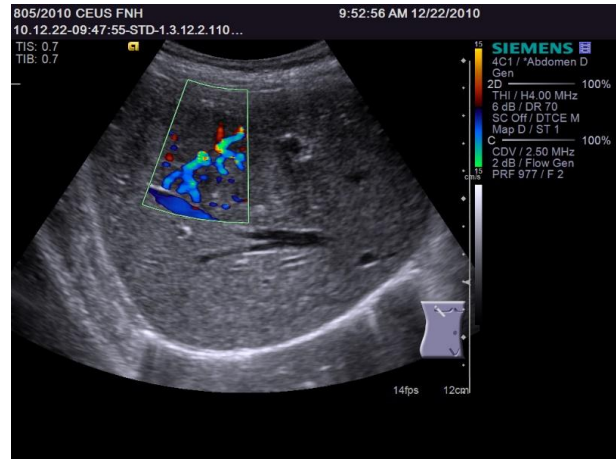
2.2.3.11 Liver hemangioma and focal fatty liver



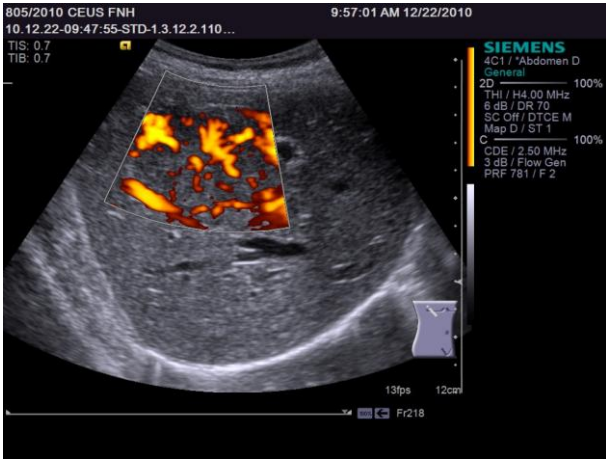
2.2.3.12 Liver hemangioma near the liver capsule



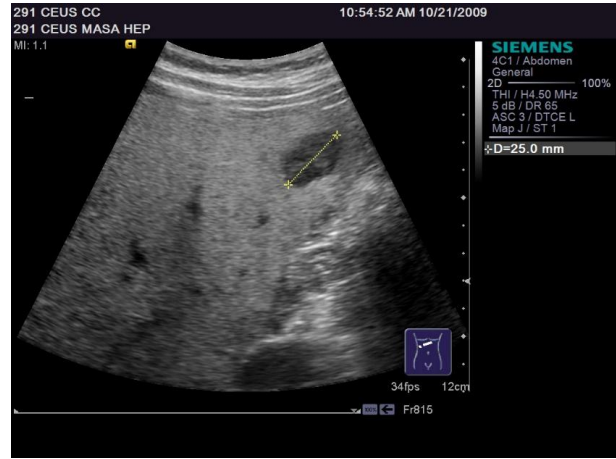
2.2.3.13 FNH a discretely quasi-isoechoic, well delimited liver lesion



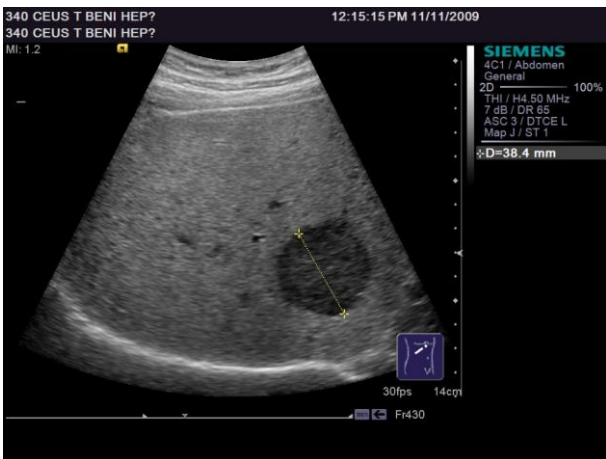
2.2.3.14 FNH Using pulsed Doppler - a typical vascular pattern (multiple, regular, radial vessels with spoke wheel pattern)



2.2.3.15 FNH a typical spoke-wheel vascular pattern in color Doppler examination

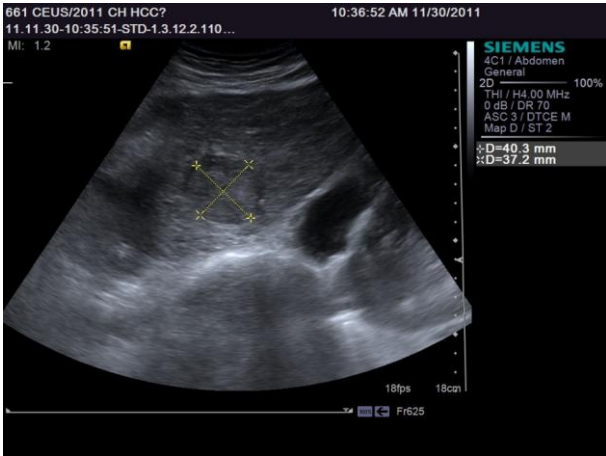


2.2.3.16 FNH – hypoechoic nodule on a fatty liver

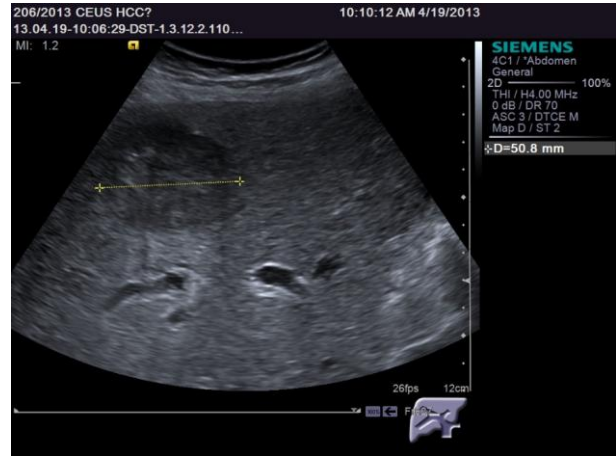


2.2.3.17 Adenoma: hypoechoic, homogeneous, well-delimited lesion in LLL in a fatty liver.

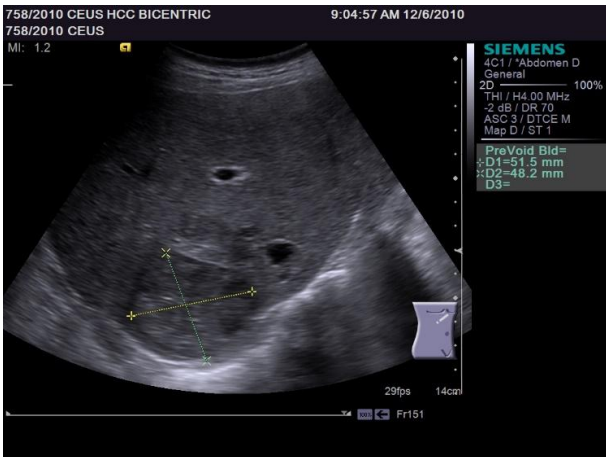
2.2.4 Malignant hepatic tumors



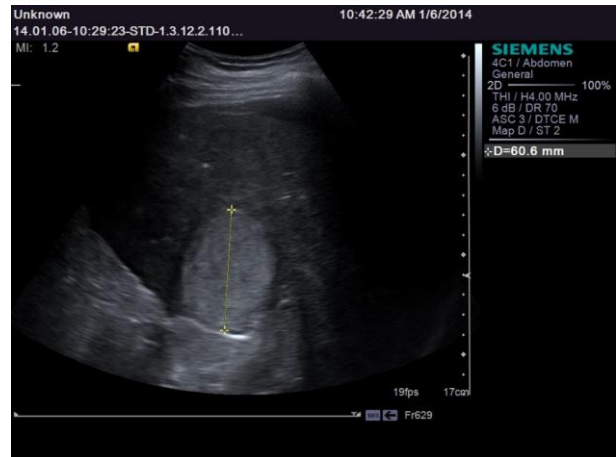
2.2.4.1 HCC: a hypoechoic, homogeneous, well delimited liver lesion



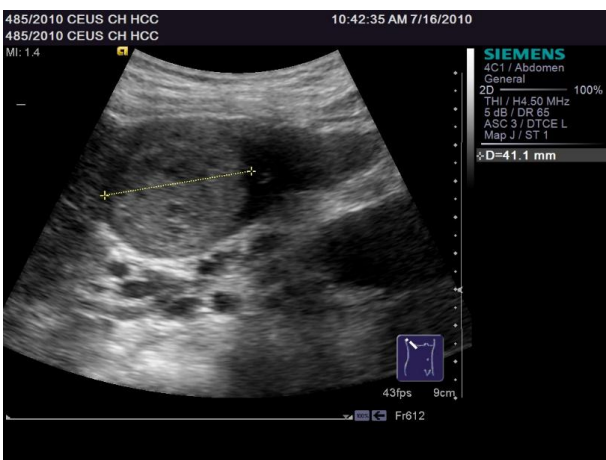
2.2.4.2 HCC: a hypoechoic, homogeneous, well delimited liver lesion



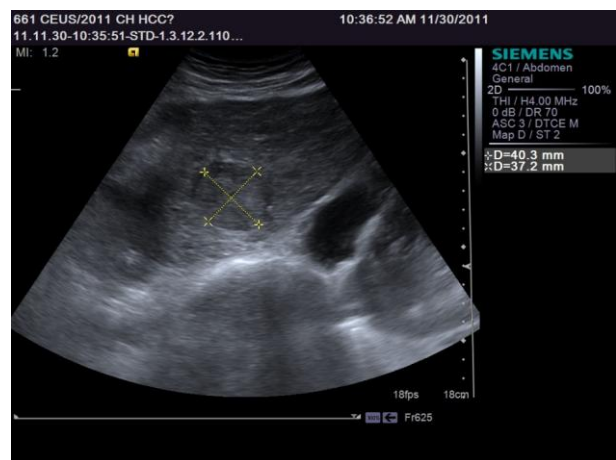
2.2.4.3 HCC: a hypoechoic, homogeneous, well delimited liver lesion in the hepatic dome



2.2.4.4 HCC: a hyperechoic, homogeneous, well delimited liver lesion and perihepatic ascites



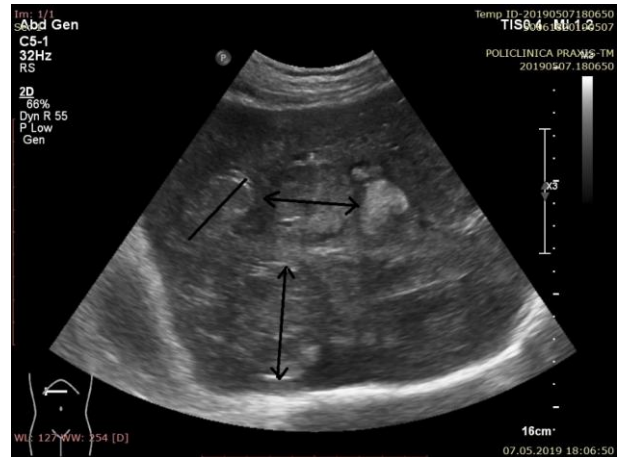
2.2.4.5 HCC: a hyperechoic, homogeneous, well delimited liver lesion in the LLL



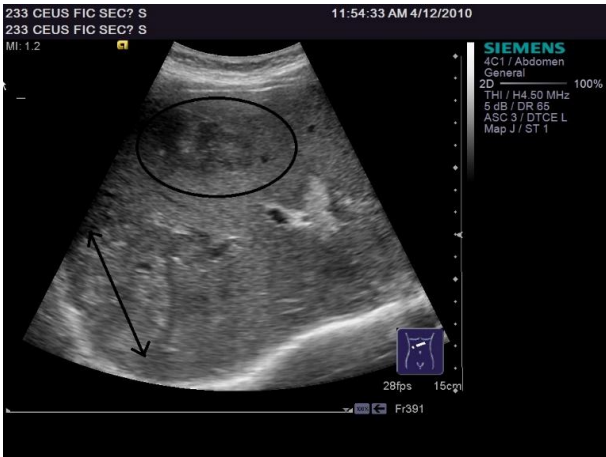
2.2.4.6 HCC: a hypoechoic, well delimited liver lesion



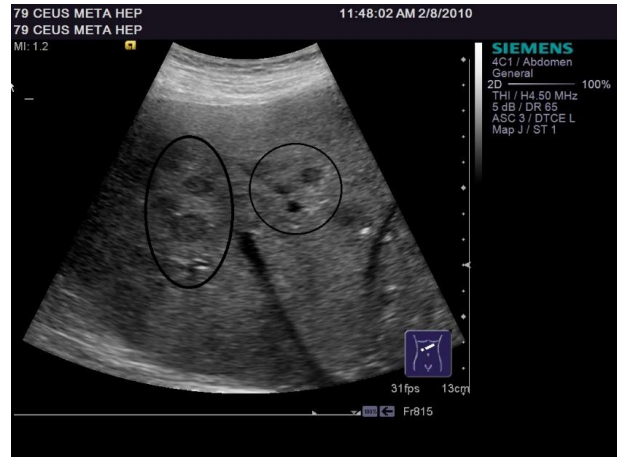
2.2.4.7 HCC: a hyperechoic, inhomogeneous, well delimited liver lesion in the RLL



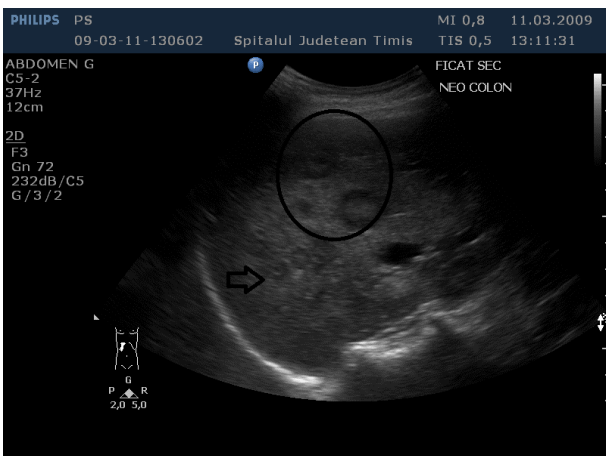
2.2.4.8 Liver metastases: multiple hepatic hyperechoic disseminations with hypoechoic halo



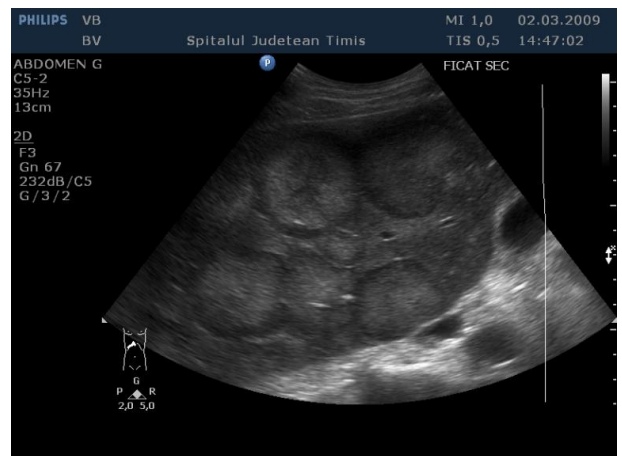
2.2.4.9 Liver metastases: inhomogeneous, hyperechoic



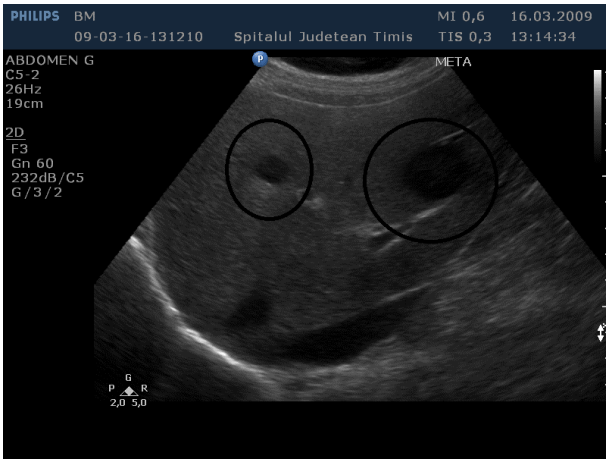
2.2.4.10 Liver metastases: multiple small hypoechoic lesions



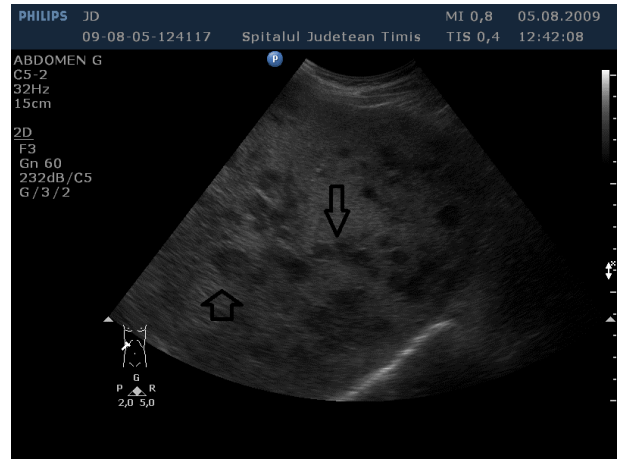
2.2.4.11 Liver metastases: multiple liver lesions "bull's eye" appearance



2.2.4.12 Liver metastases: multiple liver lesions "bull's eye" appearance



2.2.4.13 Liver metastases: hypoechoic lesions in the liver



2.2.4.14 Liver metastases: multiple small hypoechoic lesions



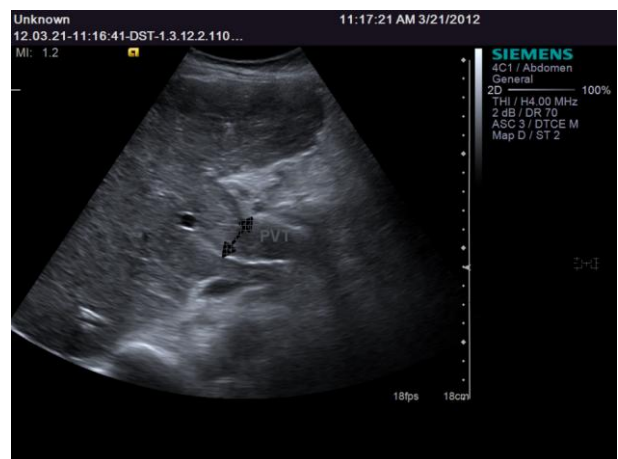
2.2.4.15 Multiple liver metastases and ascites



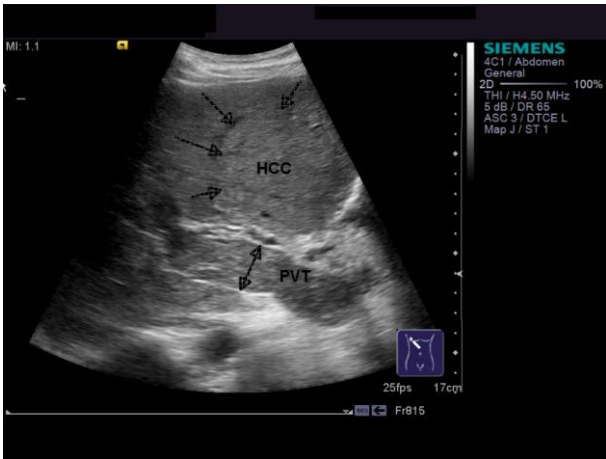
2.2.4.16 Multiple liver metastases



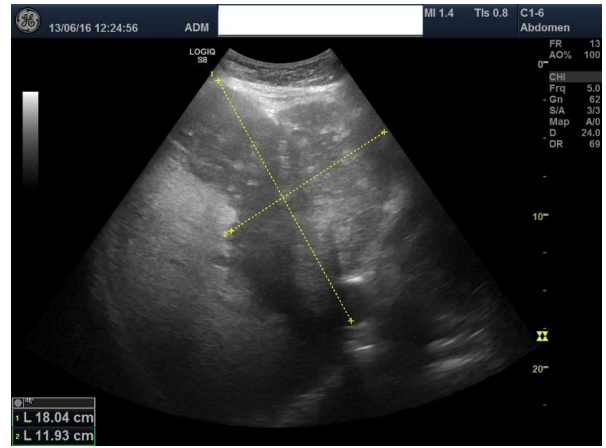
2.2.4.17 Malignant portal vein thrombosis: echo dense material in the lumen of the portal vein



2.2.4.18 Malignant PVT a solid like structure in the lumen of the portal vein

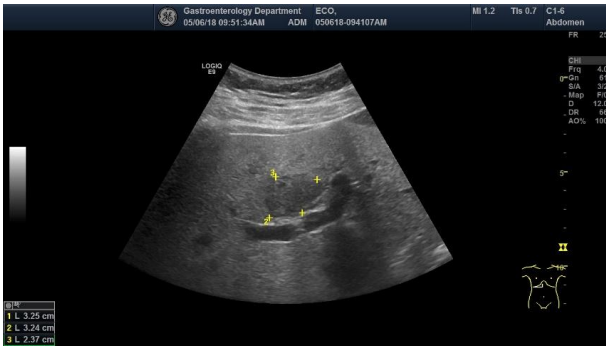


2.2.4.19 Malignant PVT;



2.2.4.20 Cholangiocarcinoma: a large inhomogeneous, hypoechoic tumor (pathology confirmed).

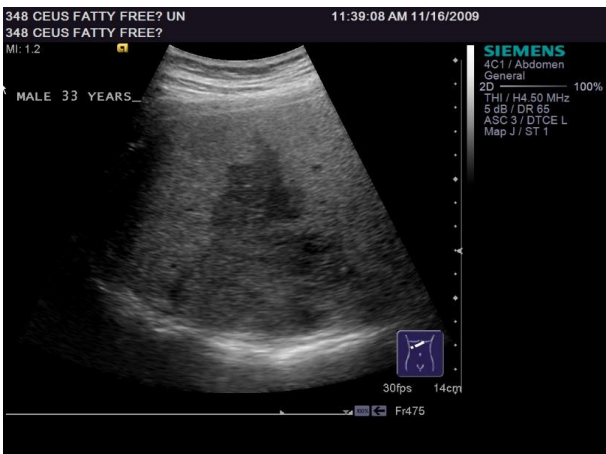
2.2.5 Other focal liver lesions



2.2.5.1 Fatty free area: hypoechoic areas with a geographical contour in a hyperechoic liver



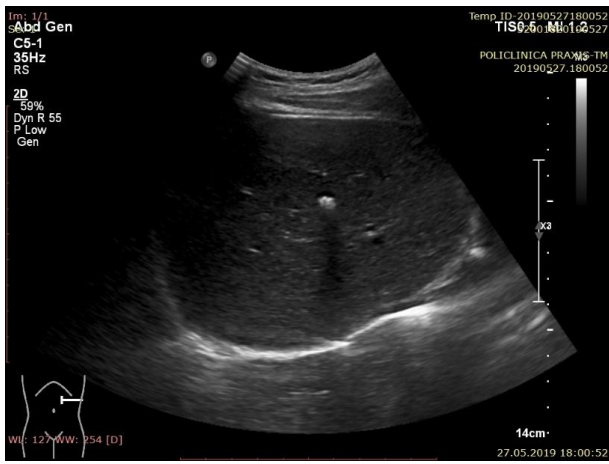
2.2.5.2 Fatty free area: a large hypoechoic areas with a geographical contour in a hyperechoic liver



2.2.5.3 Fatty free area: a large hypoechoic areas with a geographical contour in a hyperechoic liver



2.2.5.4 Fatty free area: hypoechoic areas with a geographical contour in a hyperechoic liver, located above the portal bifurcation



2.2.5.5 Liver calcification (hyperechoic lesion with posterior shadowing).

2.2.6 Focal liver lesions-video images

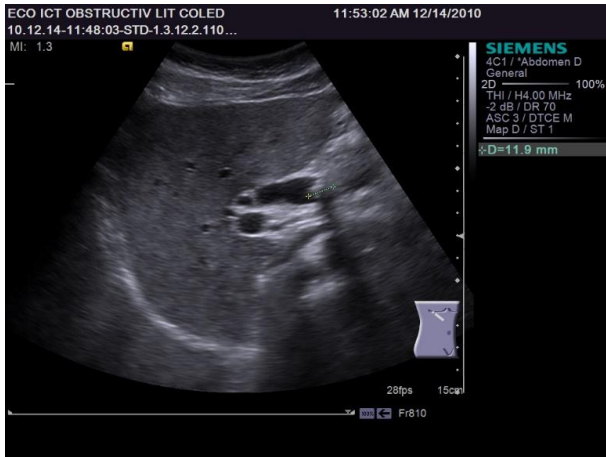
Video 2.2.6.1 Simple liver cyst: a small anechoic lesion with thin wall;	https://youtu.be/AKDITnCYuKE
Video 2.2.6.2 Simple liver cyst: a large anechoic lesion with thin wall;	https://youtu.be/RnCqJO4UFTA
Video 2.2.6.3 Simple liver cyst: a small anechoic lesion with thin wall;	https://youtu.be/mQvu6EhrbbY
Video 2.2.6.4 Simple liver cyst: a small anechoic lesion with thin wall;	https://youtu.be/j57xUA75qZg
Video 2.2.6.5 Simple liver cyst: a anechoic lesion with thin wall and posterior enhancement;	https://youtu.be/pAyGZIPBHbM
Video 2.2.6.6 Polycystic liver;	https://youtu.be/DHxzM2_dlno
Video 2.2.6.7 Polycystic liver;	https://youtu.be/pkGz4uZlxmU
Video 2.2.6.8 Hydatid cyst with daughter vesicles;	https://youtu.be/Zj1EwcmkwFM
Video 2.2.6.9 Large hydatid cyst with detached proligerous membrane;	https://youtu.be/bRBS3m4XiQc
Video 2.2.6.10 Hydatid cyst with daughter vesicles and calcified wall. Magnification image;	https://youtu.be/XvGyshPmUJw
Video 2.2.6.11 Hydatid cyst with hydatid matrix;	https://youtu.be/BjELt9ADeuk
Video 2.2.6.12 Hydatid cysts with hydatid matrix;	https://youtu.be/3mXXNnPOauk
Video 2.2.6.13 Hydatid cyst with hydatid matrix located sub-diaphragmatic, in the RLL;	https://youtu.be/u47Y4xkJc24
Video 2.2.6.14 Hydatid cyst with biliary obstruction;	https://youtu.be/5VVx8yyrk1w
Video 2.2.6.15 Hydatid cyst with daughter vesicles;	https://youtu.be/JwyDHxcO2fc
Video 2.2.6.16 Old hydatid cyst with calcification;	https://youtu.be/YkMOLEdM37s
Video 2.2.6.17 Solid hydatid calcified cyst, highly hyperechoic hydatid wall, with posterior shadow;	https://youtu.be/MCcmBQVZQ5E
Video 2.2.6.18 Typical hemangioma: a homogeneous, hyperechoic, well delimited mass;	https://youtu.be/NqS9nSA882w

Video 2.2.6.19 Typical hemangioma: a homogeneous, slightly hyperechoic, well delimited mass;	https://youtu.be/dblurF-94u0
Video 2.2.6.20 Typical hemangioma: a homogeneous, slightly hyperechoic, well delimited mass;	https://youtu.be/FzhOIIpH0Ug
Video 2.2.6.21 Typical hemangioma: a homogeneous, hyperechoic, well delimited mass in the LLL;	https://youtu.be/phxZTcaTo5w
Video 2.2.6.22 Atypical hemangioma: a isoechoic, well delimited liver mass with a hyperechoic margin	https://youtu.be/GysFhfbOszY
Video 2.2.6.23 Atypical hemangioma: a hypoechoic, well delimited liver mass with posterior enhancement;	https://youtu.be/2arB5lb3q9A
Video 2.2.6.24 Cavernous hemangiomas: hyperechoic, inhomogeneous, well delimited mass in LLL;	https://youtu.be/l8TNXJ4sO84
Video 2.2.6.25 Atypical hemangioma: a hypoechoic, well delimited liver mass;	https://youtu.be/qBouvkm8G2A
Video 2.2.6.26 Multiple hemangiomas in the liver with typical aspect;	https://youtu.be/9Gj-TpSBOEY
Video 2.2.6.27 Multiple hemangiomas in the liver with typical aspect;	https://youtu.be/mOgThaOdU6Q
Video 2.2.6.28 FNH – isoechoic, inhomogeneous close to the right hepatic vein without invasion;	https://youtu.be/O-F6hyN9FpE
Video 2.2.6.29 FNH – isoechoic, inhomogeneous liver mass close to the liver surface in the LLL;	https://youtu.be/fq6Q8MFM3Ps
Video 2.2.6.30 FNH a typical vascular pattern in color Doppler examination;	https://youtu.be/fkmtYmSQKRg
Video 2.2.6.31 FNH hypoechoic nodule on a fatty liver;	https://youtu.be/Z1cbt2vkmA4
Video 2.2.6.32 FNH a slightly hyperechoic inhomogeneous liver mass;	https://youtu.be/bPq3vzX_iP4
Video 2.2.6.33 FNH a slightly hypoechoic inhomogeneous liver mass;	https://youtu.be/quxiXnFZyeM
Video 2.2.6.34 FNH a slightly hypoechoic inhomogeneous liver mass in the hepatic dome;	https://youtu.be/AzYn2wxd7Gg
Video 2.2.6.35 Adenoma: hypoechoic, homogeneous, well delimited lesion in LLL in a fatty liver;	https://youtu.be/nW88ENQ41bg

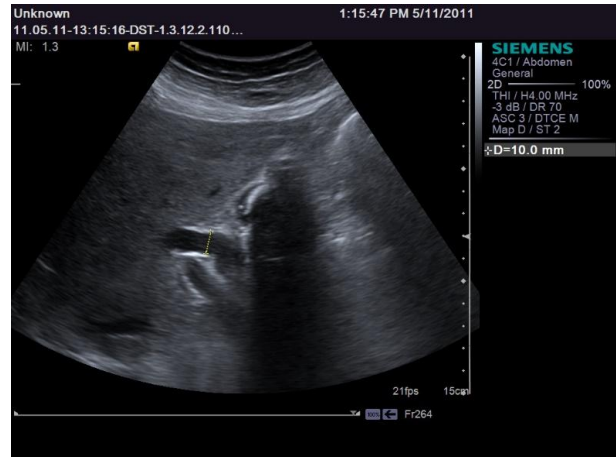
Video 2.2.6.36 HCC: a hypoechoic, homogeneous, well delimited liver lesion;	https://youtu.be/5faPGEbgsac
Video 2.2.6.37 HCC: a hypoechoic, well delimited liver lesion in the RLL dome;	https://youtu.be/2jazL2C0WUw
Video 2.2.6.38 HCC: 2 liver lesions hypoechoic, homogeneous, well delimited;	https://youtu.be/Mf7SvGIII0
Video 2.2.6.39 HCC: a hyperechoic, homogeneous, well delimited liver lesion;	https://youtu.be/hkGgZP1AR-l
Video 2.2.6.40 HCC: a hyperechoic, inhomogeneous, well delimited liver lesion close to the liver surface in the LLL;	https://youtu.be/ihOm_rqoFxl
Video 2.2.6.41 HCC: a hypoechoic, well delimited liver lesion in the RLL;	https://youtu.be/GDJXIPruPbk
Video 2.2.6.42 HCC hyperechoic, inhomogeneous, well delimited liver lesion in the RLL;	https://youtu.be/ggkJhu-W3Cc
Video 2.2.6.43 HCC hyperechoic, inhomogeneous, well delimited liver lesion (“bull’s eye” appearance);	https://youtu.be/zwY8TWKkb3s
Video 2.2.6.44 HCC a large inhomogeneous, well delimited liver lesion and perihepatic ascites;	https://youtu.be/wjAwN8XxPx4
Video 2.2.6.45 HCC a small hypoechoic, homogeneous, well delimited liver lesion and perihepatic ascites;	https://youtu.be/ES3I1YMRav0
Video 2.2.6.46 Multiple hyperechoic liver metastases;	https://youtu.be/Hs6UgATpKel
Video 2.2.6.47 Multiple liver metastases;	https://youtu.be/mwqPt8jlcaE
Video 2.2.6.48 Multiple liver metastases “bull’s eye” appearance;	https://youtu.be/5Xmgv1TWOOs
Video 2.2.6.49 Liver metastases: a large liver mass;	https://youtu.be/qb6scq8xZu4
Video 2.2.6.50 Liver metastases: multiple small hypoechoic lesions;	https://youtu.be/yccJjJrrqYQ
Video 2.2.6.51 Multiple liver metastases;	https://youtu.be/Hs6UgATpKel
Video 2.2.6.52 Multiple transonic liver metastases;	https://youtu.be/iyix93Ck-s
Video 2.2.6.53 Multiple transonic liver metastases;	https://youtu.be/hz-S70HZVvg
Video 2.2.6.54 Malignant PVT in the common PV;	https://youtu.be/t8DOJDzXHCU

Video 2.2.6.55 Malignant PVT echo dense material in the common portal vein and in the right portal vein;	https://youtu.be/fMpJmXqRWyY
Video 2.2.6.56 Cholangiocarcinoma: echoic material without posterior shadow in the lumen of a dilated MBD;	https://youtu.be/RdYjZKnUoDU
Video 2.2.6.57 Fatty free area: a large hypoechoic areas with a geographical contour in a hyperechoic liver;	https://youtu.be/sC9uiYsp2yw
Video 2.2.6.58 Focal fatty liver a large hyperechoic areas with a geographical contour;	https://youtu.be/-7LJm8EaxHY
Video 2.2.6.59 Focal fatty liver a large hyperechoic areas with a geographical contour around the gall bladder;	https://youtu.be/EuUS8JWvvGk
Video 2.2.6.60 Fatty free area: hypoechoic areas with a geographical contour in a hyperechoic liver, located above the portal bifurcation;	https://youtu.be/8-4Qrlkiull
Video 2.2.6.61 Fatty free area: hypoechoic areas with a geographical contour in a hyperechoic liver.	https://youtu.be/rwjriWkWv14

2.3 Biliary obstruction



2.3.1 Biliary obstruction. Choledocholithiasis. Large common bile duct with the presence of a hyperechoic image with posterior acoustic shadowing



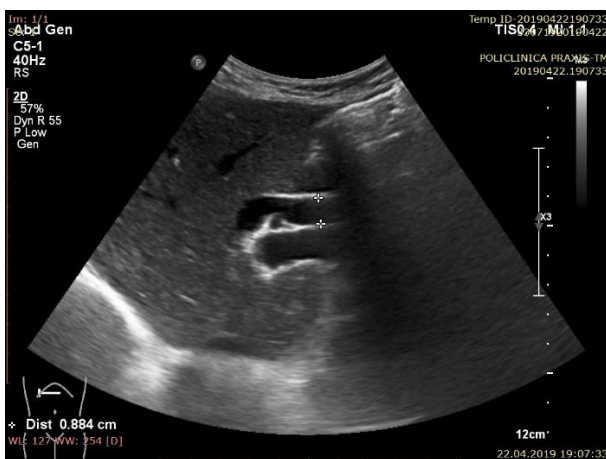
2.3.2 Biliary obstruction. Hepatic hilum with large common bile duct



2.3.3 Biliary obstruction. Hepatic hilum with large common bile duct



2.3.4 Biliary obstruction. Hepatic hilum with large common bile duct



2.3.5 Biliary obstruction. Hepatic hilum with large common bile duct



2.3.6 Biliary obstruction. Intrahepatic dilatation of the biliary tree



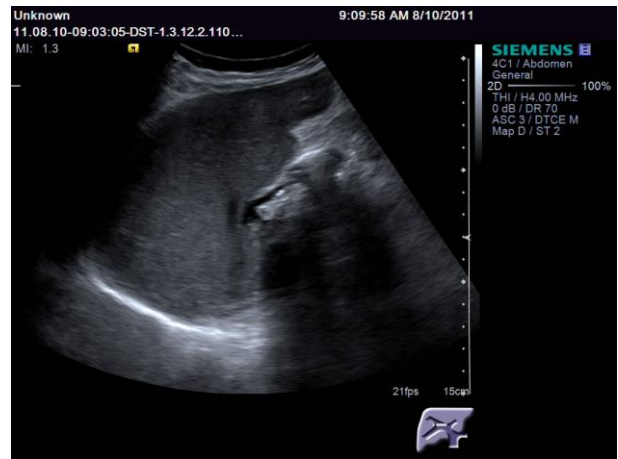
2.3.7 Biliary obstruction. Hepatic hilum with large common bile duct



2.3.8 Hydatid hepatic cyst rupture into the biliary tree



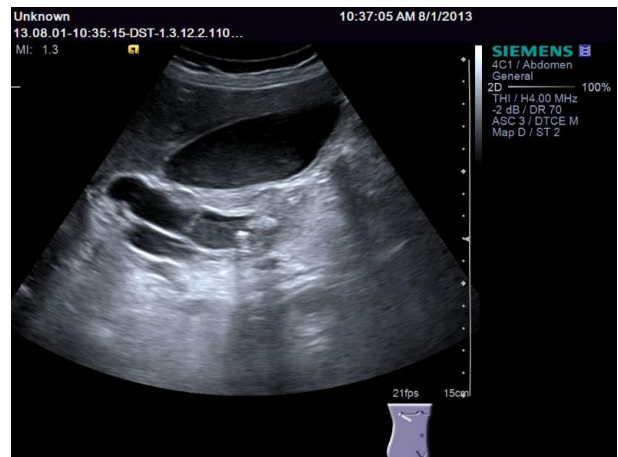
2.3.9 Biliary obstruction. Hepatic hilum with large common bile duct



2.3.10 Biliary obstruction. Cholelithiasis. Large common bile duct with the presence of multiple hyperechoic images with posterior acoustic shadowing



2.3.11 Biliary obstruction. Cholelithiasis. Large common bile duct with the presence of a hyperechoic image with posterior acoustic shadowing



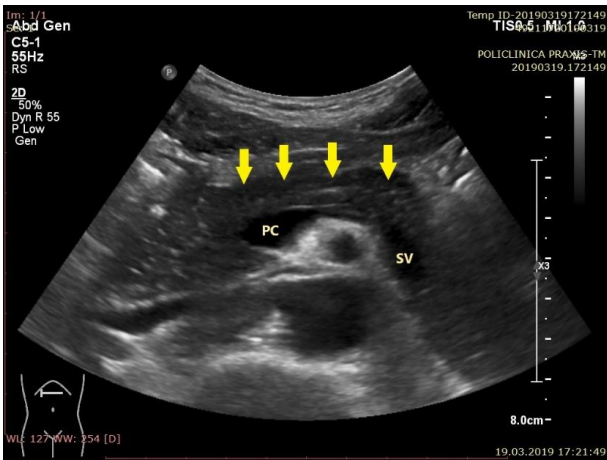
2.3.12 Biliary obstruction. Cholelithiasis. Large common bile duct with the presence of two hyperechoic images with posterior acoustic shadowing

2.4 Biliary obstruction- videos

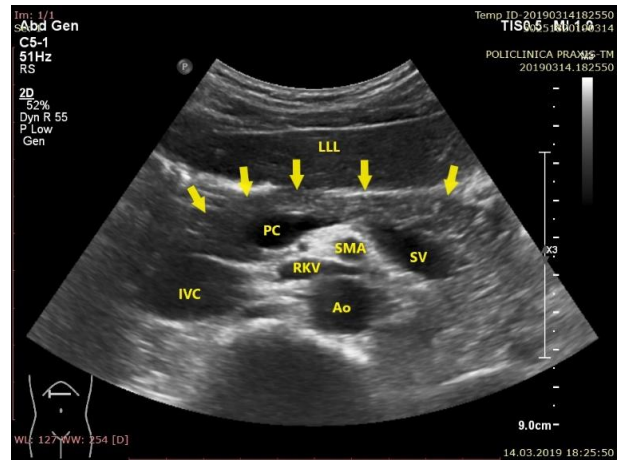
2.4.1 Biliary obstruction. Choledocho-lythiasis. Gallbladder sludge and stones. Hyperechoic images with acoustic shadowing in the gallbladder and main biliary duct.	https://youtu.be/GIJT1AjTx60
2.4.2 Biliary obstruction. Hepatic hilum with large common bile duct and intrahepatic dilatation of the biliary tree.	https://youtu.be/8D6YavyfE6I
2.4.3 Biliary obstruction. Hepatic hilum with large common bile duct. Gallbladder with large stones.	https://youtu.be/bN_WIKjPFt8
2.4.4 Biliary obstruction. Choledocho-lythiasis. Large common bile duct with the presence of multiple hyperechoic images with posterior acoustic shadowing.	https://youtu.be/t4Ww22wCr-8
2.4.5 Biliary obstruction. Intrahepatic dilatation of the biliary tree.	https://youtu.be/bkzE0jupKtA
2.4.6 Biliary obstruction. Hilar hepatic tumor. Intrahepatic dilatation of the biliary tree. Hyperechoic mass in the hepatic hilum.	https://youtu.be/GEaccsOLh7c

Chapter 3 - Pancreas

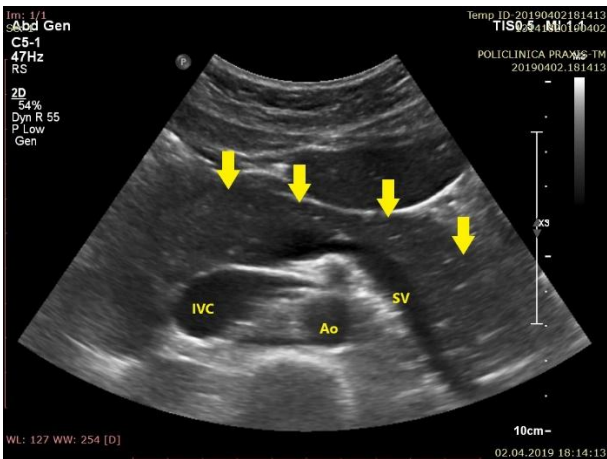
3.1 Pancreas - normal aspects



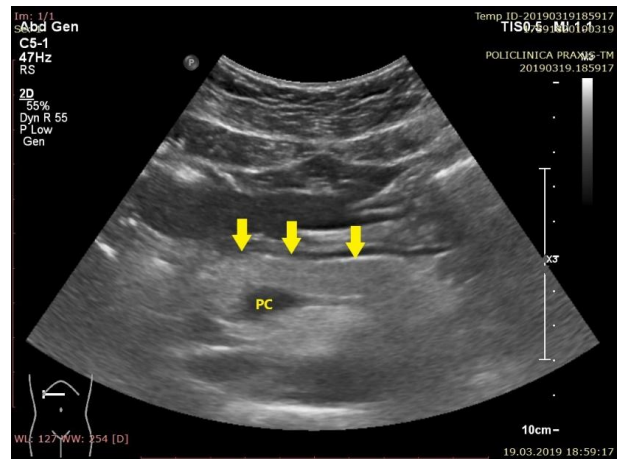
3.1.1 Normal pancreas: Homogenous structure of the pancreas; PC- portal confluence; SV- splenic vein (Transverse section in the epigastrium)



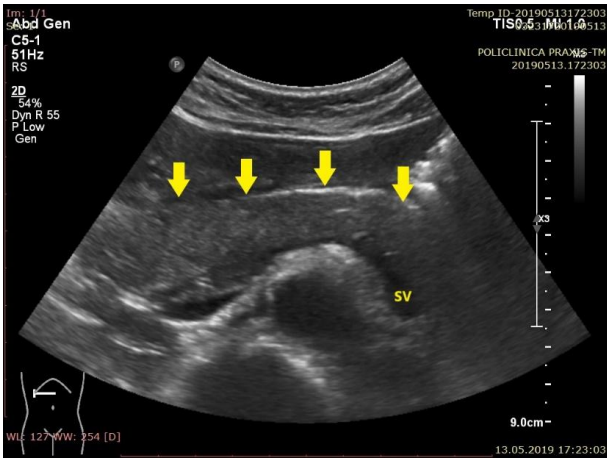
3.1.2 Normal pancreas: Homogenous structure of the pancreas; PC- portal confluence; SV- splenic vein; Ao- aorta; IVC- inferior vena cava; SMA- superior mesenteric artery; RKV- right kidney vein; LLL- left liver lobe (Transverse section in the epigastrium)



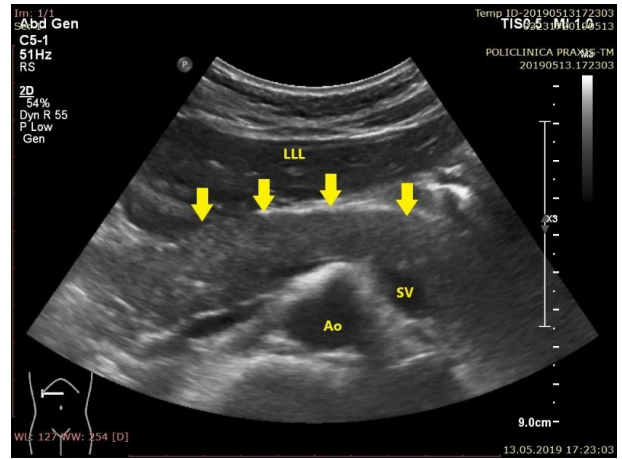
3.1.3 Normal pancreas: Homogenous structure of the pancreas; SV- splenic vein; Ao- aorta; IVC- inferior vena cava (Transverse section in the epigastrium)



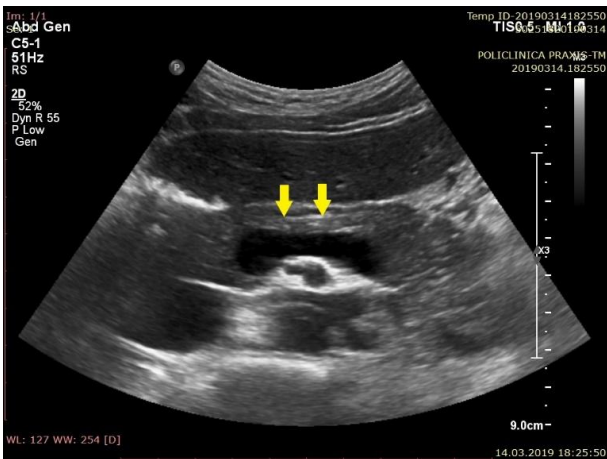
3.1.4 Normal pancreas: Homogenous structure of the pancreas; PC- portal confluence (Transverse section in the epigastrium)



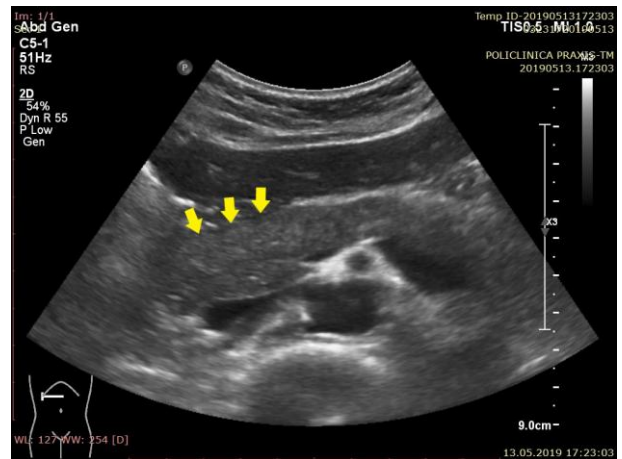
3.1.5 Normal pancreas: Homogenous structure of the pancreas; SV- splenic vein (Transverse section in the epigastrium)



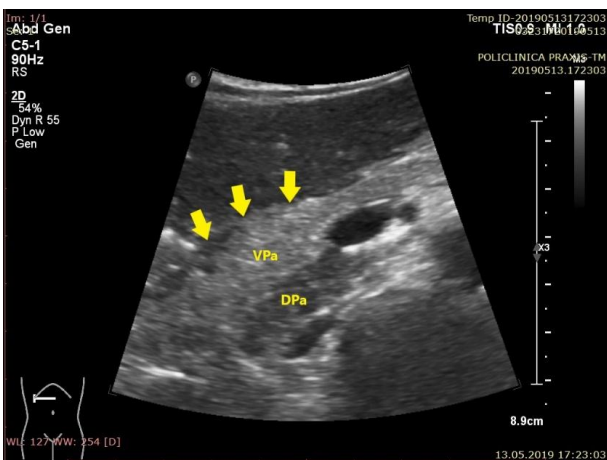
3.1.6 Normal pancreas: Homogenous structure of the pancreas; SV- splenic vein; Ao- aorta; LLL- left liver lobe (Transverse section in the epigastrium)



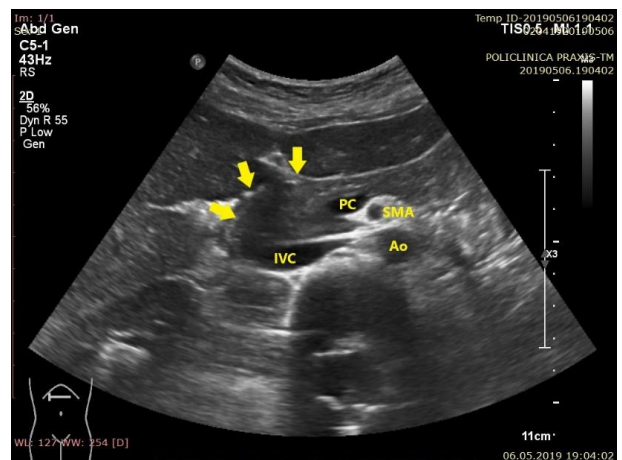
3.1.7 Normal pancreas: pancreas body; homogenous structure (Transverse section in the epigastrium)



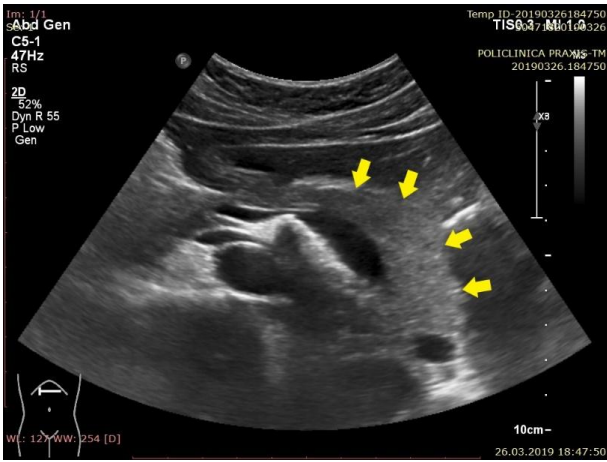
3.1.8 Normal pancreas: pancreas head; homogenous structure (Transverse section in the epigastrium)



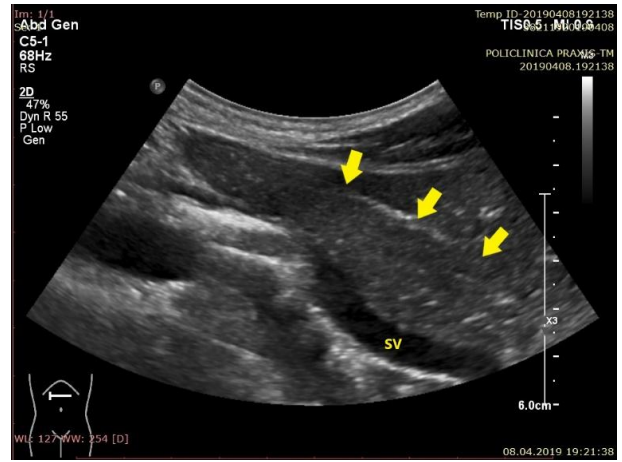
3.1.9 Normal pancreas: pancreas head; VPa- ventral pancreas; DPa- Dorsal pancreas (Transverse section in the epigastrium)



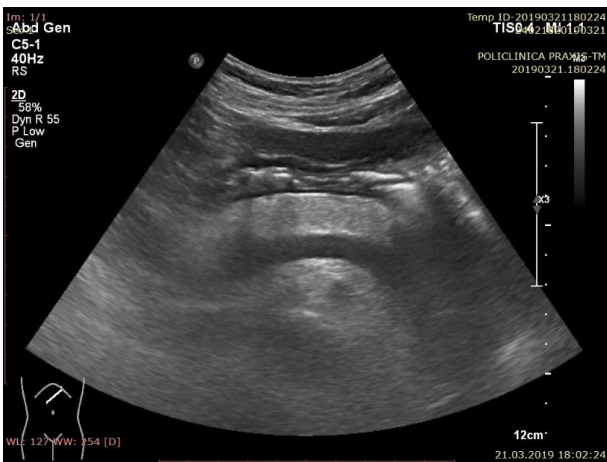
3.1.10 Normal pancreas: pancreas head; homogenous structure; PC- portal confluence; Ao- aorta; SMA- superior mesenteric artery; IVC- inferior vena cava (Transverse section in the epigastrium)



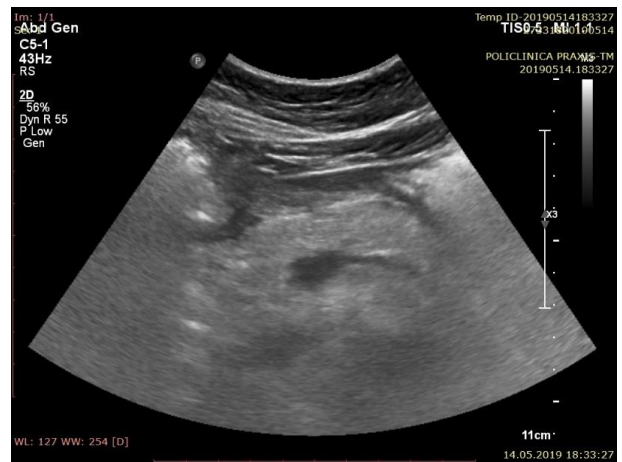
3.1.11 Normal pancreas: pancreas tail; homogenous structure (Transverse section in the epigastrium)



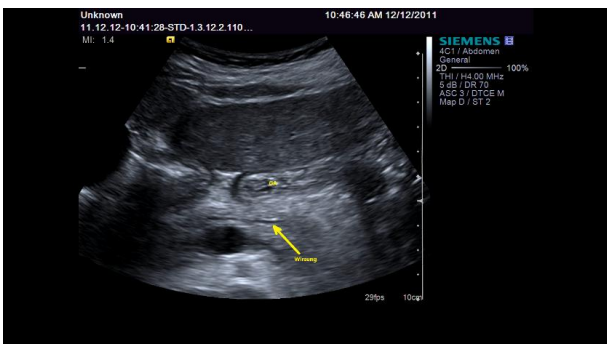
3.1.12 Normal pancreas: pancreas tail; homogenous structure (Transverse section in the epigastrium)



3.1.13 Normal pancreas: lipomatous pancreas; hyperechoic structure of the pancreas (Transverse section in the epigastrium)

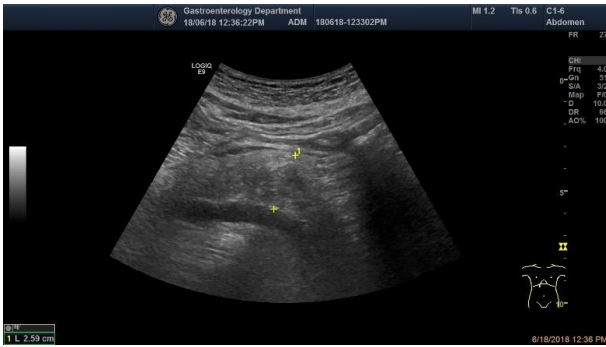


3.1.14 Normal pancreas: lipomatous pancreas; hyperechoic structure of the pancreas (Transverse section in the epigastrium)



3.1.15 Normal pancreas: normal Wirsung duct; GA- gastric antrum (Transverse section in the epigastrium)

3.2 Pancreas – acute pancreatitis



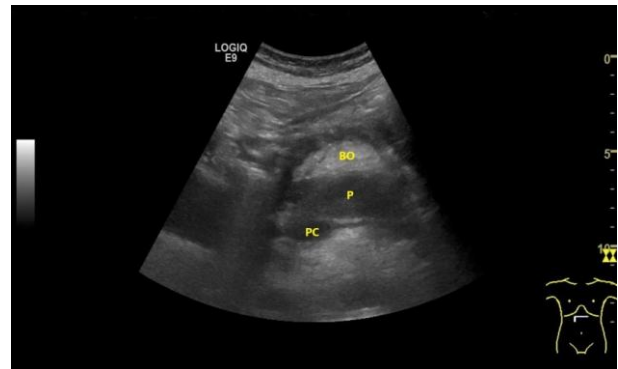
3.2.1 Acute pancreatitis: enlarged pancreas (Transverse section in the epigastrium)



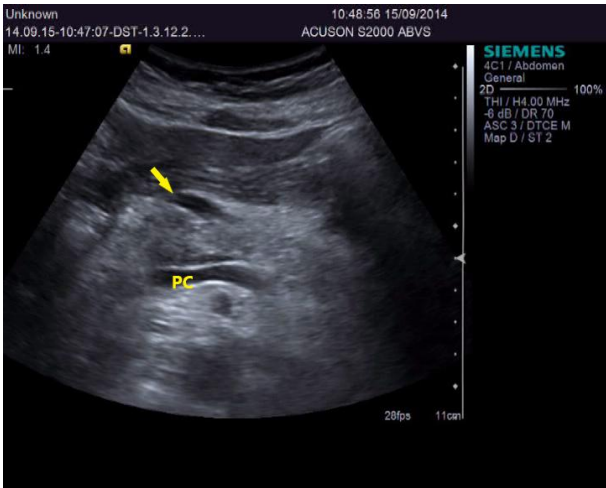
3.2.2 Acute pancreatitis: enlarged inhomogeneous pancreas; fluid collection anterior to the pancreas (Transverse section in the epigastrium)



3.2.3 Acute pancreatitis: inhomogeneous pancreas; large fluid collection (anechoic structure) anterior to the pancreas (Transverse section in the epigastrium)



3.2.4 Acute pancreatitis: inhomogeneous pancreas, enlarged and hyperechoic bursa omentalis; P- pancreas; PC- portal confluence; BO- bursa omentalis (Transverse section in the epigastrium)



3.2.5 Acute pancreatitis: inhomogeneous pancreas; small fluid collection (anechoic structure) anterior to the pancreas; PC- portal confluence (Transverse section in the epigastrium)



3.2.6 Acute pancreatitis: enlarged inhomogeneous pancreas (Transverse section in the epigastrium)

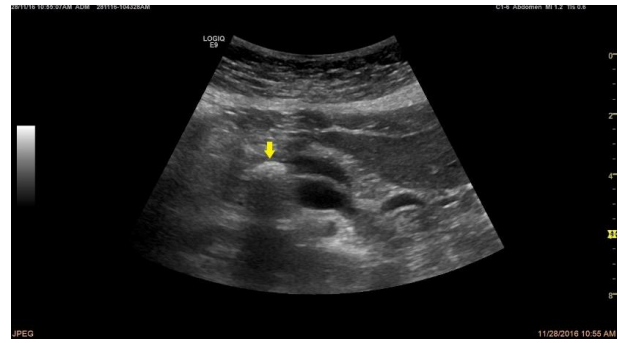


3.2.7 Acute pancreatitis: inhomogeneous pancreas; fluid collection (anechoic structure) anterior to the pancreas (Transverse section in the epigastrium)

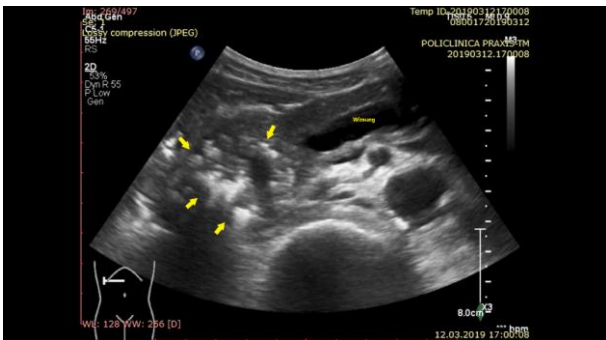
3.3 Pancreas – chronic pancreatitis



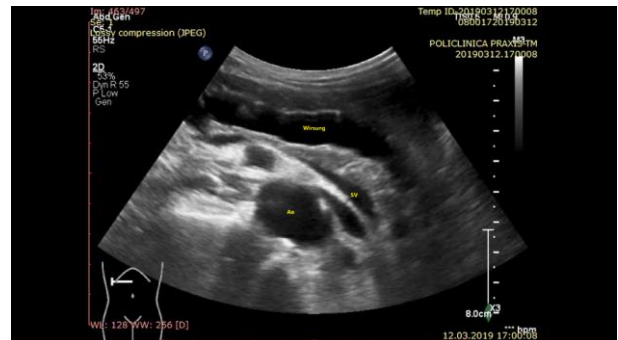
3.3.1 Chronic pancreatitis: inhomogeneous structure of the pancreas; multiple hyperechoic structures in the head, body and tail of the pancreas (calcifications); dilated Wirsung duct of approximately 8 mm (Transverse section in the epigastrium)



3.3.2 Chronic pancreatitis: dilated Wirsung of approximately 10 mm due to an obstructive Wirsung stone (hyperechoic image of approximately 12 mm with posterior shadow) (Transverse section in the epigastrium)



3.3.3 Chronic pancreatitis: inhomogeneous structure of the pancreas; multiple hyperechoic structures in the head of the pancreas (calcifications); dilated Wirsung duct of approximately 15 mm (Transverse section in the epigastrium)

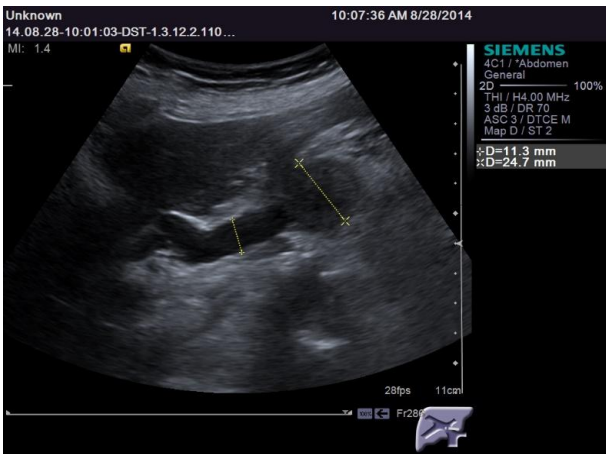


3.3.4 Chronic pancreatitis: dilated Wirsung duct of approximately 20 mm; Ao- aorta; SV- splenic vein (Transverse section in the epigastrium)



3.3.5 Chronic pancreatitis: inhomogeneous structure of the pancreas; multiple hyperechoic structures in the head of the pancreas (calcifications); dilated Wirsung duct of approximately 12 mm due to an obstructive Wirsung stone (hyperechoic image of approximately 12 mm with posterior shadow) (Transverse section in the epigastrium)

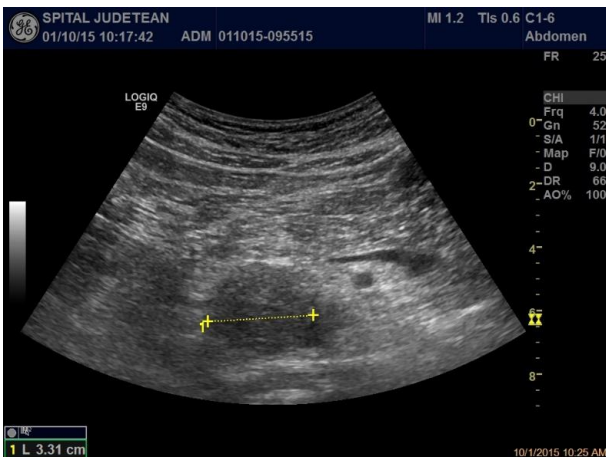
3.4 Pancreas – pancreatic tumors



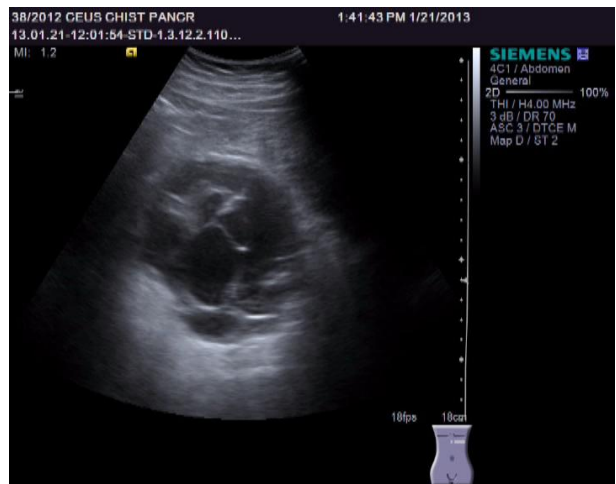
3.4.1 Cephalic Pancreatic tumor complicated with obstructive jaundice: hypoechoic lesion of approximately 25 mm situated in the head of the pancreas; the lesion invades/compresses the main biliary duct, which is dilated (approximately 11 mm) (Transverse section in the epigastrium)



3.4.2 Cephalic Pancreatic tumor: hypoechoic lesion of approximately 27 mm situated in the head of the pancreas (Transverse section in the epigastrium)



3.4.3 Cephalic Pancreatic tumor: hypoechoic lesion of approximately 33 mm situated in the head of the pancreas (Transverse section in the epigastrium)



3.4.4 Cystadenoma of the pancreas: Anechoic lesion of approximately 8 cm in size, with septa inside (Transverse section in the epigastrium)

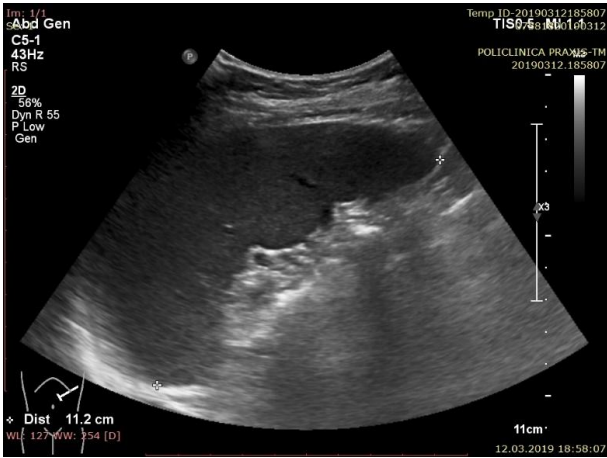
3.5 Pancreas – video images

3.5.1 Normal pancreas: Homogenous structure of the pancreas (Transverse section in the epigastrium).	https://youtu.be/naGzqwc8NGE
3.5.2 Normal pancreas: Homogenous structure of the pancreas; stomach and duodenum dilated postprandial (Transverse section in the epigastrium).	https://youtu.be/SLisPLTHZZo
3.5.3 Normal pancreas: Homogenous structure of the pancreas head, body and tail; (Transverse section in the epigastrium).	https://youtu.be/lt4iVqjXQ_8
3.5.4 Normal pancreas: Homogenous structure of the pancreas head, body and tail; normal Wirsung duct (Transverse section in the epigastrium).	https://youtu.be/p66nJqq256E
3.5.5 Normal pancreas: pancreas head; homogenous structure (Transverse section in the epigastrium).	https://youtu.be/0qypu5NL95c
3.5.6 Normal pancreas: Homogenous structure of the pancreas head, body and tail; (Transverse section in the epigastrium).	https://youtu.be/R8O_zKNzq84
3.5.7 Normal pancreas: lipomatous pancreas; hyperechoic structure of the pancreas (Transverse section in the epigastrium).	https://youtu.be/1QqNQwdNY1w
3.5.8 Normal pancreas: lipomatous pancreas; hyperechoic structure of the pancreas (Transverse section in the epigastrium).	https://youtu.be/EcWRTK7kWWwE
3.5.9 Normal pancreas: lipomatous pancreas; hyperechoic structure of the pancreas (Transverse section in the epigastrium).	https://youtu.be/OoicN13MzEc
3.5.10 Normal pancreas: normal Wirsung duct (Transverse section in the epigastrium).	https://youtu.be/VDSZ39pzhy4
3.5.11 Acute pancreatitis: inhomogeneous pancreas; large fluid collection (anechoic structure) anterior to the pancreas (Transverse section in the epigastrium).	https://youtu.be/-IH1ivSTsSM
3.5.12 Acute pancreatitis: inhomogeneous pancreas; fluid collection (anechoic structure) anterior to the pancreas (Transverse section in the epigastrium).	https://youtu.be/b2RKs5fZBgs
3.5.13 Acute pancreatitis: enlarged inhomogeneous pancreas; fluid collection anterior to the pancreas (Transverse section in the epigastrium).	https://youtu.be/dievo1sEn1E

<p>3.5.14 Chronic pancreatitis: inhomogeneous structure of the pancreas; multiple hyperechoic structures in the head, body and tail of the pancreas (calcifications); dilated Wirsung duct (Transverse section in the epigastrium).</p>	<p>https://youtu.be/0zIPcrtcaY4</p>
<p>3.5.15 Chronic pancreatitis: dilated Wirsung duct; inhomogeneous structure of the pancreas; multiple hyperechoic structures in the pancreas (calcifications) (Transverse section in the epigastrium).</p>	<p>https://youtu.be/wpmgDurVUkE</p>
<p>3.5.16 Chronic pancreatitis: inhomogeneous structure of the pancreas; multiple hyperechoic structures in the head of the pancreas (calcifications); dilated Wirsung duct due to an obstructive Wirsung stone (hyperechoic image of with posterior shadow) (Transverse section in the epigastrium).</p>	<p>https://youtu.be/ELFacJ0Bs4E</p>
<p>3.5.17 Chronic pancreatitis: inhomogeneous structure of the pancreas; multiple hyperechoic structures in the head of the pancreas (calcifications); dilated Wirsung duct due to an obstructive Wirsung stone (hyperechoic image of with posterior shadow) (Transverse section in the epigastrium).</p>	<p>https://youtu.be/Bz6ZTYSIGDs</p>
<p>3.5.18 Pancreas: dilated Wirsung (Transverse section in the epigastrium).</p>	<p>https://youtu.be/KeQ2gK3Wq0o</p>
<p>3.5.19 Chronic pancreatitis: inhomogeneous structure of the pancreas; multiple hyperechoic structures in the head of the pancreas (calcifications); dilated Wirsung duct due to an obstructive Wirsung stone (hyperechoic image of with posterior shadow) (Transverse section in the epigastrium).</p>	<p>https://youtu.be/4wAr9WVFNO8</p>
<p>3.5.20 Cephalic Pancreatic tumor complicated with obstructive jaundice: hypoechoic lesion of approximately situated in the head of the pancreas causing dilatation of the main biliary duct (Transverse section in the epigastrium).</p>	<p>https://youtu.be/N-QfmlWE7No</p>

Chapter 4. Spleen

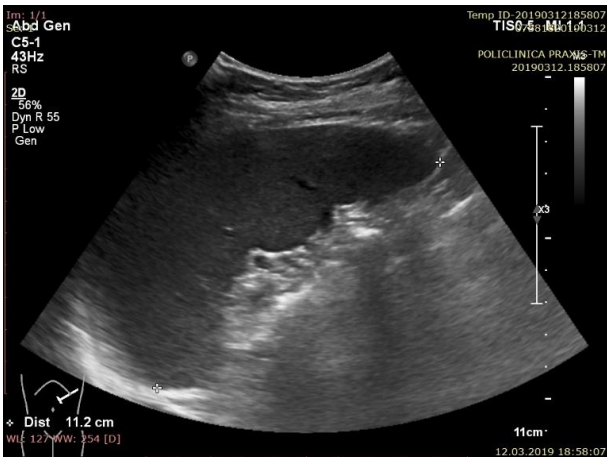
4.1 Spleen- normal aspects



4.1.1 Normal spleen: homogeneous, "inverted comma" appearance. (Longitudinal section in the left flank)



4.1.2 Normal spleen: homogeneous, "inverted comma" appearance. (Longitudinal section in the left flank)

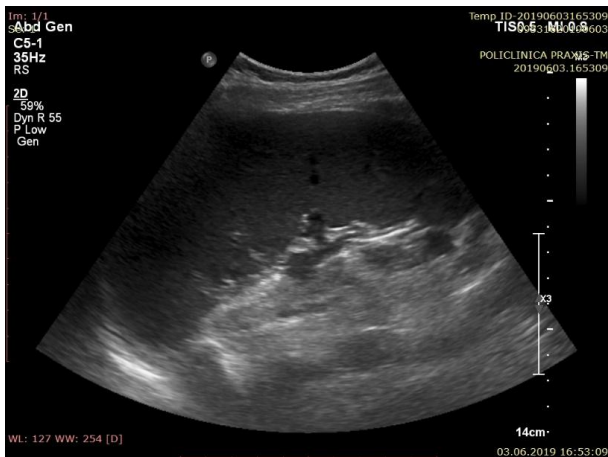


4.1.3 Normal spleen: homogeneous, "inverted comma" appearance. (Longitudinal section in the left flank)



4.1.4 Normal spleen: homogeneous, "inverted comma" appearance. (Longitudinal section in the left flank)

4.2 Spleen–splenomegaly



4.2.1. Splenomegaly – A flank scan at the level of the hilum displaying the spleen in its greatest longitudinal dimension



4.2.2 Mild splenomegaly- the spleen is identified in the longitudinal flank scan as a rounded triangle between the upper renal pole and the diaphragm, the length of the spleen between the two poles is 14.6 cm

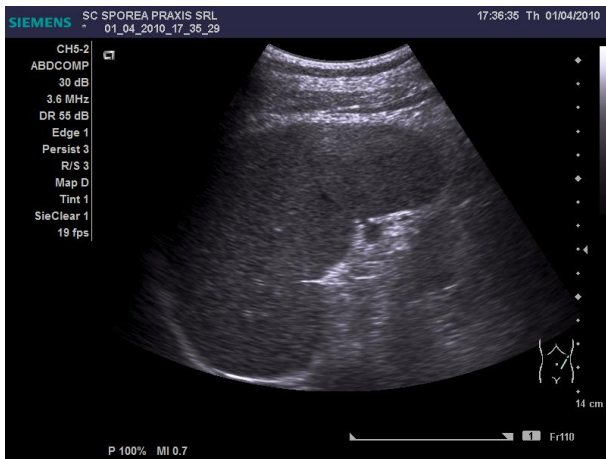


4.2.3 Moderate splenomegaly: the length of the spleen 15.2 cm (longitudinal section in the left flank)

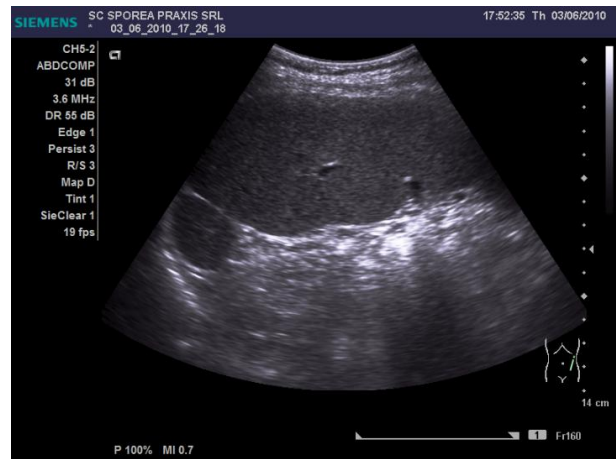


4.2.4 Severe splenomegaly- the length of the spleen 16.5 cm (longitudinal section in the left flank)

4.3 Spleen– Accessory spleen

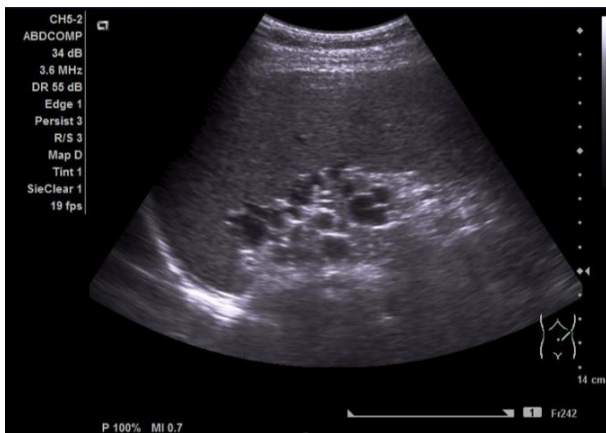


4.3.1 Accessory spleen of the hilum- round solid structure with echogenicity similar to that of the main spleen near the hilum (longitudinal section in the left flank)



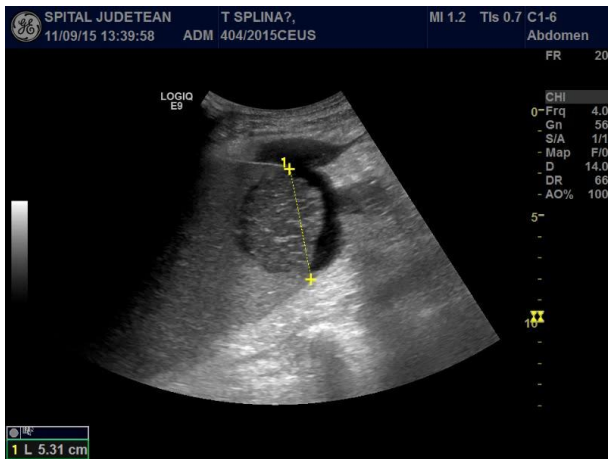
4.3.2 Accessory spleen- round solid structure with echogenicity similar to that of the main spleen above the superior pole of the spleen, near the diaphragm (longitudinal section in the left flank)

4.4 Spleen – splenic hilum varices

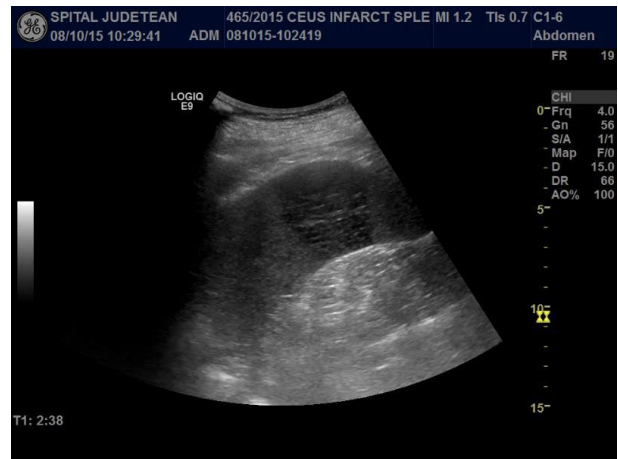


4.3.1 Splenic hilum varices - multiple serpiginous anechoic tubular channels in the hilar region (Sagittal scan of the spleen).

4.5 Spleen – lesions of the spleen



4.5.1 Splenic tumor – hypoechoic tumor of the spleen surrounded by ascites (anechoic image)



4.5.2 Splenic infarction - sub capsular hypoechoic segmental lesion

4.6 Spleen – video images

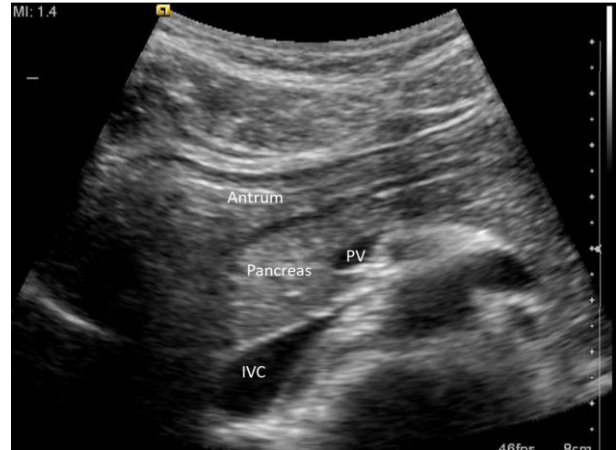
Video 4.6.1 Normal spleen: homogeneous, "inverted comma" appearance	https://youtu.be/Uj-fM5t0fOI
Video 4.6.2 Mild splenomegaly: the length of the spleen is 127 mm and the splenic hilum	https://youtu.be/XGTDQXaeVrs
Video 4.6.3 Splenomegaly: an enlarged spleen	https://youtu.be/e1TlyP3p2lw
Video 4.6.4 Splenomegaly: an enlarged spleen and globular shape	https://youtu.be/rL0VqSyijmo
Video 4.6.5 Splenomegaly with portal hypertension- Sagittal color Doppler view of the spleen and the spleen hilum in a patient with liver cirrhosis	https://youtu.be/fz1ZCfwh_LE
Video 4.6.6 Splenomegaly with dilatation of the splenic vein	https://youtu.be/VY8ReLWkdrY
Video 4.6.7 Accessory spleen: round solid structure with echogenicity similar to that of the main spleen	https://youtu.be/Yt4yKshqOe8
Video 4.6.8 Splenic varices -multiple serpiginous tubular channels in the hilar region. The visualized splenic parenchyma appears normal. The multiple tubular channels seen in the splenic hilum fill with color and represent splenic hilar varices in a patient with liver cirrhosis.	https://youtu.be/Kif6FOZdG-A
Video 4.6.9 Spleen metastases: a hypoechoic tumor in the spleen and left pleural effusion	https://youtu.be/j2NGNDVeJyc
Video 4.6.10 Splenic infarction: a hypoechoic peripheral, wedge-shaped region in the spleen	https://youtu.be/LzMCeBNqH6w
Video 4.6.11 Splenic hematoma: a sub capsular crescent-shaped hypoechoic lesion is noted at the upper pole of spleen.	https://youtu.be/qoqcJ_gnCSw

Chapter 5 - Gastrointestinal ultrasound (GIUS)

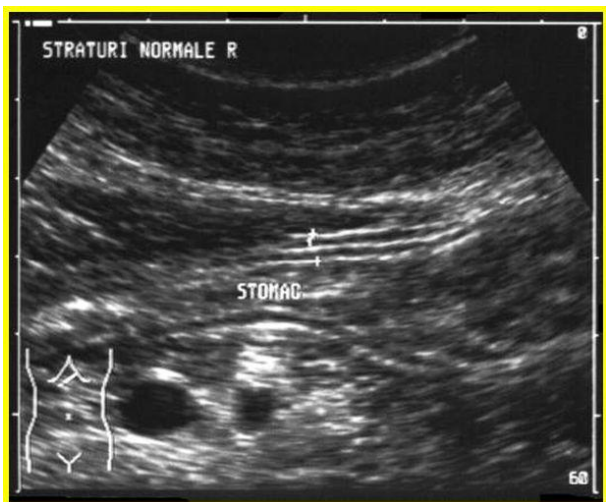
5.1. Normal aspect of the gastrointestinal tract



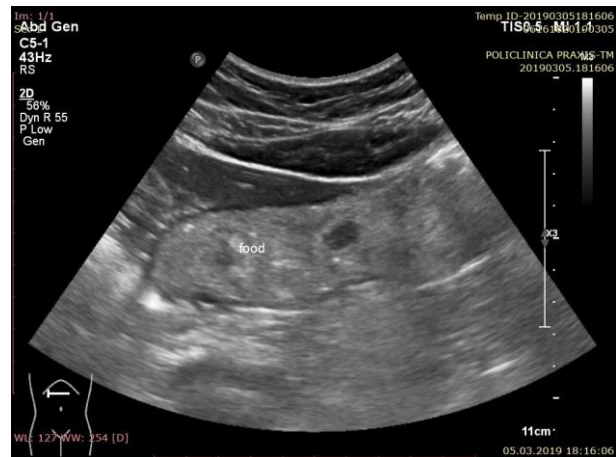
5.1.1. Normal oeso-gastric junction – longitudinal section. The oesophageal strata near the liver are well seen.



5.1.2. Normal antrum – transverse section.



5.1.3. Normal antrum – transverse section. Gastric strata are well seen - muscularis propria and mucosa are hypoechoic, submucosa is hyperechoic, as well as the interface between the mucosa and the lumen and between muscularis propria and serosa



5.1.4. Normal antrum in a non-fasting patient – transverse section. Distended antrum with echogenic content (food)



5.1.5. Normal antrum in a non-fasting patient – longitudinal section. Distended antrum with echoic content (food)



5.1.6. Normal ileum – transverse section in the right iliac fossa – normal layers of the ileum are visible – muscularis propria and mucosa are hypoechoic, submucosa is hyperechoic, as well as the interface between the mucosa and the lumen and between muscularis propria and serosa (unmarked)



5.1.7. Normal colon (sigmoid) wall (2.3 mm) – oblique section in the left iliac fossa

5.2. Stomach



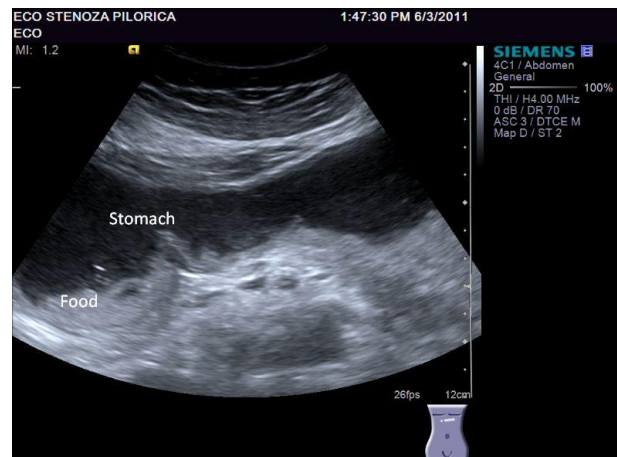
5.2.1. Delayed gastric emptying – benign pyloric stenosis – distended stomach in a fasting patient, with echoic inhomogeneous content. Gastric wall strata are preserved



5.2.2. Delayed gastric emptying – benign pyloric stenosis – distended stomach in a fasting patient, with anechoic and echoic content. Gastric wall strata are preserved



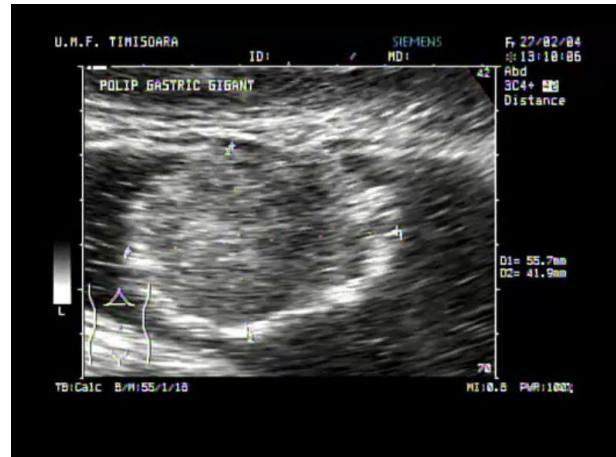
5.2.3. Delayed gastric emptying – benign pyloric stenosis – distended stomach in a fasting patient, with anechoic and echoic content. Gastric wall strata are preserved



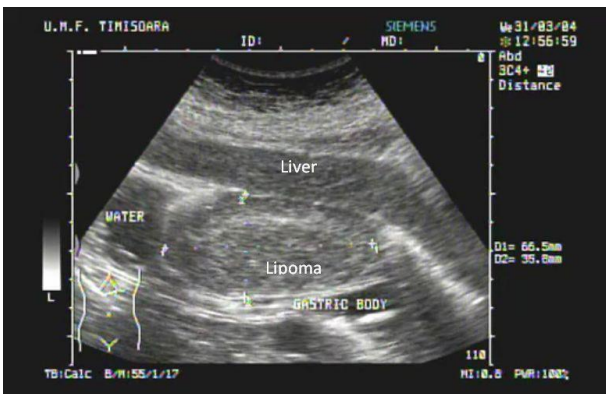
5.2.4. Delayed gastric emptying – benign pyloric stenosis – distended stomach in a fasting patient, with anechoic and echoic (food) content



5.2.5. Gastric polyp. Examination after water ingestion. Large hypoechoic mass protruding from the anterior wall of the antrum. Gastric wall strata are preserved



5.2.6. Gastric polyp. Examination after water ingestion. Large hypoechoic mass protruding from the anterior wall of the antrum. Gastric wall strata are preserved



5.2.7. Gastric lipoma. Examination after water ingestion, longitudinal section. Large hyperechoic mass protruding from the gastric wall. Gastric wall strata are preserved



5.2.8. Cancer of the eso-gastric junction. Examination after water ingestion, longitudinal section – thickened wall with no strata visible (arrow)



5.2.9. Gastric cancer. Examination after water ingestion, transverse section. Thickened, irregular wall, with no strata visible



5.2.10. Gastric cancer. Examination after water ingestion, transverse section. Thickened, irregular wall, with no strata visible



5.2.11. Gastric cancer. Examination after water ingestion, transverse section. Thickened, irregular wall, with no strata visible.



5.2.12. Gastric cancer. Transverse section. Thickened wall of the antrum, with no strata visible.



5.2.13. Gastric cancer. Longitudinal section. Thickened wall of the antrum, with no strata visible – “target lesion” sign.

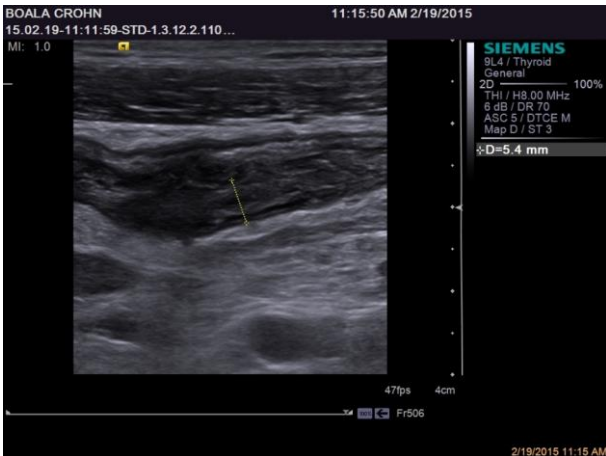
5.3. Small Bowell



5.3.1. Crohn's disease – terminal ileum. Slightly thickened bowel wall 5.3 mm, with strata still visible



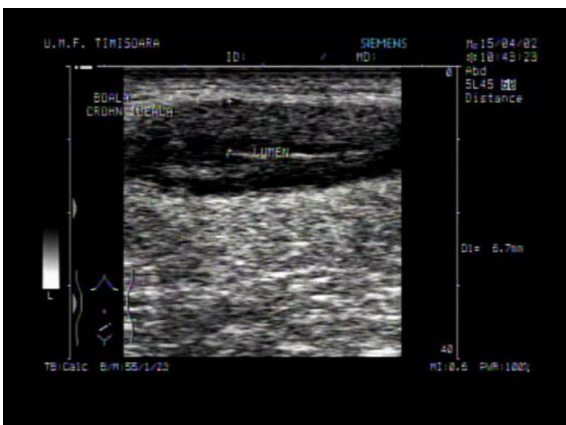
5.3.2. Crohn's disease – terminal ileum. High frequency linear probe. Slightly thickened bowel wall 5.4 mm, with strata barely visible



5.3.3. Crohn's disease – terminal ileum. High frequency linear probe. Slightly thickened bowel wall 4.1 mm, with strata barely visible



5.3.4. Crohn's disease – terminal ileum. High frequency linear probe. Thickened bowel wall 5.5 mm, with strata barely visible



5.3.5. Crohn's disease – terminal ileum. High frequency linear probe. Thickened bowel wall 6.7 mm, no strata visible



5.3.6. Stenosing Crohn's Disease – terminal ileum. Thickened, hypochoic wall of the ileum – no strata visible. The proximal bowel loop is dilated



5.3.7. Crohn's Disease. Thickened, hypoechoic wall of the caecum and of the terminal ileum – no strata visible



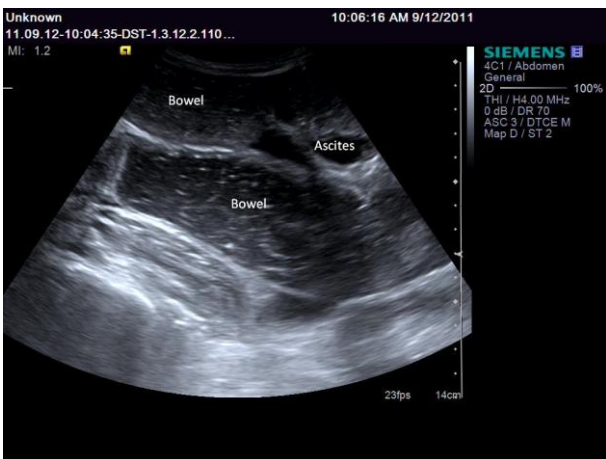
5.3.8. Bowel obstruction. Dilated small bowel loop (2.93 cm) filled with liquid, villi visible



5.3.9. Bowel obstruction. Dilated small bowel loop (3.33 cm) filled with liquid, villi visible

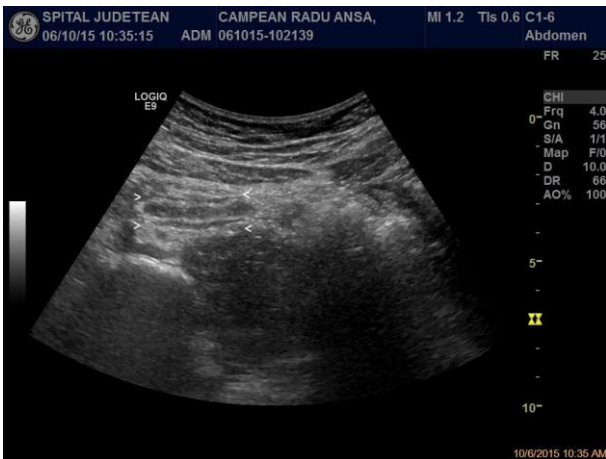


5.3.10. Bowel obstruction. Dilated small bowel loop filled with liquid, villi visible. Small amount of liquid visible between the bowel loops



5.3.11. Bowel obstruction. Dilated small bowel loops filled with liquid. Small amount of liquid visible between the bowel loops

5.4. Colon



5.4.1. Enlarged appendix – appendicitis?



5.4.2. Acute appendicitis – enlarged appendix (target sign in the middle of the image). Small amount of liquid near the caecum



5.4.3. Acute appendicitis – high frequency linear transducer. Enlarged appendix (upper right side of the image). Small amount of liquid near it



5.4.4. Colonic diverticulum – The colonic contour is deformed by an outpouching, centered by a hyperechoic image (arrow). Normal colonic and diverticula wall



5.4.5. Colonic diverticulum. An outpouching, centered by a hyperechoic image with posterior shadowing (air), deforms the colonic contour. Normal colonic and diverticula wall.



5.4.6. Acute diverticulitis. Thickened hypoechoic diverticulum wall, centered by hyperechoic image. Segmental thickening of the colonic wall



5.4.7. Acute diverticulitis. Hypoechoic mass near the colonic wall (Diverticulitis? Collection?)



5.4.8. Acute diverticulitis and peri-diverticular abscess. Thickened hypoechoic diverticulum wall, centered by hyperechoic image. Anechoic collection extending to the urinary bladder.



5.4.9. Status post-acute diverticulitis and peri-diverticular abscess. Normal colonic wall, near it an an/hypoechoic round lesion (collection? abscess?).



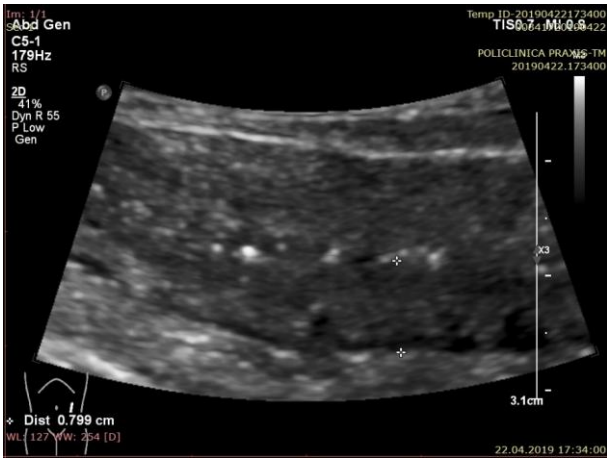
5.4.10. Pericolic abscess. Anechoic collection near the sigmoid colon in a patient with history of acute diverticulitis



5.4.11. Ulcerative colitis. Thickened colonic wall (8.3 mm) – transverse colon. The strata are well-seen, thickened submucosa.



5.4.12. Ulcerative colitis. Thickened colonic wall (6.9 mm) – descending colon. The strata are barely visible, thickened submucosa.



5.4.13. Ulcerative colitis. Magnification. Thickened colonic wall (7.9 mm) – descending colon. The strata are barely visible, thickened submucosa.



5.4.14. Follow-up of treated ulcerative colitis. Slightly thickened colonic wall (4.5 mm) – sigmoid colon. The strata are barely visible, thickened submucosa.



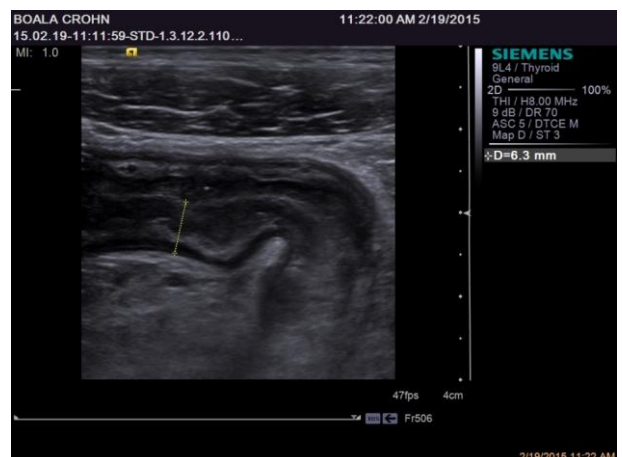
5.4.15. Crohn's disease. Magnification. Thickened sigmoid wall (6.3 mm). Colonic strata not visible.



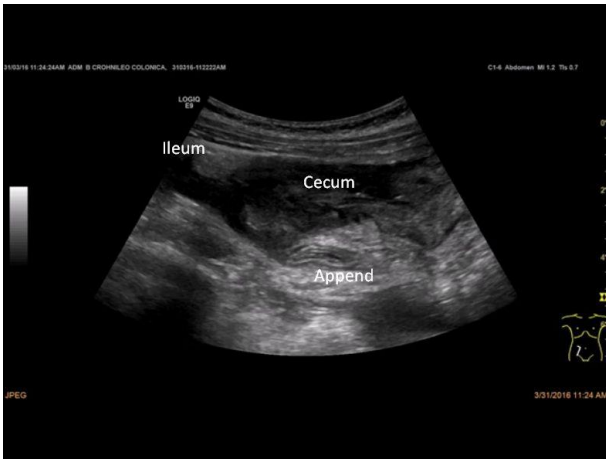
5.4.16. Crohn's disease. Slightly thickened sigmoid wall (4.5 mm). Colonic strata not visible.



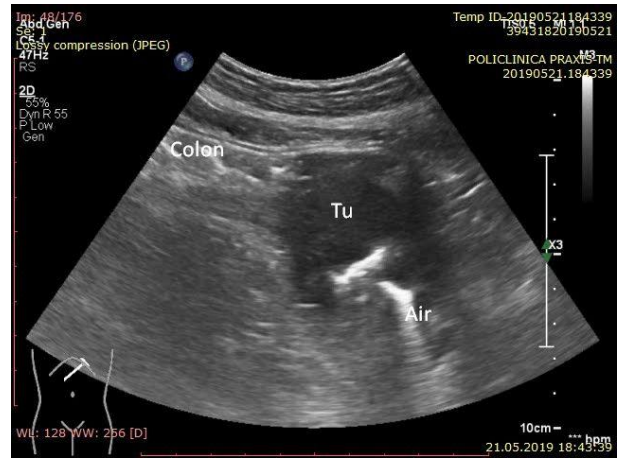
5.4.17. Crohn's disease. Thickened hypoechoic sigmoid wall. Colonic strata not visible.



5.4.18. Crohn's disease. Linear, high frequency transducer. Thickened hypoechoic wall (6.3 mm) of the splenic flexure. Colonic strata not visible.



5.4.19. Ileocecal Crohn's disease. Magnification. Thickened wall of the terminal ileum and of the cecum. Barely seen strata. Appendix looks normal



5.4.20. Colonic tumor. "Kidney-like" lesion on the transverse colon – hypoechoic mass (thickened colonic wall - no strata visible) centered by air.



5.4.21. Sigmoid tumor. "Kidney-like" lesion on the sigmoid colon – hypoechoic mass (thickened colonic wall - no strata visible) centered by air.

5.5. GIUS – Video images

5.5.1. Normal oeso-gastric junction – longitudinal section. The oesophageal strata near the liver are well seen.	https://youtu.be/tBgKhJirWAA
5.5.2. Normal antrum after water ingestion – transverse section: gastric layers are well seen – anechoic water content in the middle	https://youtu.be/cAOL3sLlwJY
5.5.3. Normal antrum in a non - fasting patient – transverse section: distended antrum filled with echoic material (food)	https://youtu.be/Dyu-xe8j8CU
5.5.4. Normal antrum in a non - fasting patient – longitudinal section: round, distended antrum filled with echoic material (food), situated anterior to the superior mesenteric vein	https://youtu.be/GpOCnnuNFpU
5.5.5. Delayed gastric emptying – benign pyloric stenosis – distended stomach in a fasting patient, with anechoic and echoic content. Gastric strata are preserved	https://youtu.be/aKiqGNHi-To
5.5.6. Delayed gastric emptying – benign pyloric stenosis – distended stomach in a fasting patient, with anechoic and echoic content. Gastric strata are preserved	https://youtu.be/VVIHMGZS80A
5.5.7. Cancer of the oeso-gastric junction. Thickened wall (arrow) of the eso-gastric junction, stomach filled with water	https://youtu.be/Ffoph7mxprg
5.5.8. Gastric cancer – transverse section. Thickened gastric wall (antrum), no strata visible. In longitudinal section – target aspect	https://youtu.be/a5ZNiFaZdT8
5.5.9. Gastric cancer – transverse section. Thickened gastric wall (antrum), no strata visible	https://youtu.be/NGkNxjiTGc4
5.5.10. Normal ileum – oblique section in the right iliac fossa. The bowel wall is well seen. Peristalsis present	https://youtu.be/BrvJcSZA4z0
5.5.11. Normal ileum – oblique section in the right iliac fossa. The bowel wall is well seen. Peristalsis present	https://youtu.be/SgFx_P5864g
5.5.12. Normal small bowel loop – high frequency linear probe. The bowel wall is well seen, as well as the intestinal villi. Very active peristalsis	https://youtu.be/fWBfk8QmzXs
5.5.13. Crohn’s Disease – terminal ileum. High frequency linear probe. Thickened, hypoechoic wall of the ileum – no strata visible. Increased Doppler signal inside the bowel wall	https://youtu.be/ebnxiPEFiTw
5.5.14. Crohn’s Disease – terminal ileum. High frequency linear probe. Thickened, hypoechoic wall of the ileum – strata poorly visualized	https://youtu.be/2NbzlANX3Vs

5.5.15. Stenosing Crohn's Disease – terminal ileum. Thickened, immobile, hypoechoic wall of the ileum – no strata visible. The proximal bowel loop is dilated	https://youtu.be/NU1HfoqaKvk
5.5.16. Crohn's Disease. Thickened, hypoechoic wall of the caecum and of the terminal ileum – no strata visible. Small amount of liquid between the intestinal loops	https://youtu.be/sOA6S1qQFe0
5.5.17. Bowel obstruction – dilated small bowel loop with small movement	https://youtu.be/-xqxSCizp8l
5.5.18. Bowel obstruction – dilated small bowel loop with active peristalsis and with small amount of liquid between the intestinal loops	https://youtu.be/3uHG_Hhf1Qw
5.5.19. Bowel obstruction – dilated small bowel loop with active peristalsis and with small amount of liquid between the intestinal loops	https://youtu.be/YF0m-xFHEx8
5.5.20. Acute appendicitis – enlarged appendix (target sign in the middle of the image). Small amount of liquid near the caecum (see fig. 5.4.2 for details)	https://youtu.be/Nx7LXIB9X5c
5.5.21. Acute appendicitis – high frequency linear transducer. Enlarged appendix (upper right side of the image). Small amount of liquid near it (see fig. 5.4.3 for details)	https://youtu.be/pVzS2kz4M0w
5.5.22. Colonic diverticulum. The colonic contour is deformed by an outpouching, centered by a hyperechoic image with posterior shadowing (air). Normal colonic and diverticula wall.	https://youtu.be/NpCp5cGjaeo
5.5.23. Acute diverticulitis. Thickened hypoechoic diverticulum wall, centered by hyperechoic images.	https://youtu.be/28NGbBc6GDc
5.5.24. Acute diverticulitis. Thickened hypoechoic diverticulum wall, centered by hyperechoic image (arrow).	https://youtu.be/a-oZXw2mPW0
5.5.25. Acute diverticulitis and peri-diverticular abscess. Thickened hypoechoic diverticulum wall, centered by hyperechoic image. Anechoic collection extending to the urinary bladder (see fig. 5.4.8 for details)	https://youtu.be/Ns4RqqPAWM0
5.5.26. Status post-acute diverticulitis and peri-diverticular abscess. Normal colonic wall, near it an an/hypoechoic round lesion (collection? abscess?).	https://youtu.be/FvJcfYLyGrs
5.5.27. Ulcerative colitis. Magnification. Thickened colonic wall – descendent colon	https://youtu.be/OiotdF6WGV4

<p>5.5.28. Ulcerative colitis – high frequency linear transducer. Thickened colonic wall – descendent colon. The strata are well-seen, thickened submucosa.</p>	<p>https://youtu.be/St-chmTC8dg</p>
<p>5.5.29. Ulcerative colitis – high frequency linear transducer. Thickened colonic wall – descendent colon. The strata are well seen, thickened submucosa</p>	<p>https://youtu.be/s7IXFLRM7Hs</p>
<p>5.5.30. Crohn’s disease. Magnification. Thickened sigmoid wall. Barely seen colonic strata. Irregular outer limit of the colon.</p>	<p>https://youtu.be/ReVNNyGVuAk</p>
<p>5.5.31. Ileocecal Crohn’s disease. Magnification. Thickened wall of the terminal ileum and of the cecum. Barely seen strata. Appendix looks normal (see fig. 5.4.19 for details)</p>	<p>https://youtu.be/PsG4mhqaHBs</p>
<p>5.5.32. Colonic tumor. “Kidney-like” lesion on the transverse colon – hypoechoic mass (thickened colonic wall - no strata visible) centered by air.</p>	<p>https://youtu.be/EI4bTaD1U_8</p>
<p>5.5.33. Sigmoid tumor. “Kidney-like” lesion on the sigmoid colon – hypoechoic mass (thickened colonic wall - no strata visible) centered by air.</p>	<p>https://youtu.be/u3uNMkMUIZk</p>

Chapter 6 - Kidneys

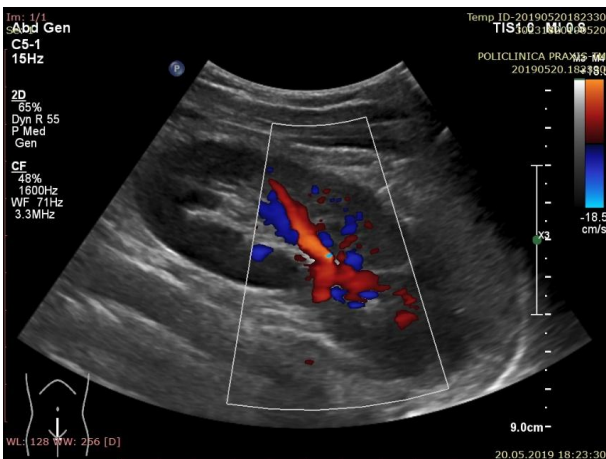
6.1 Kidneys – normal aspects.



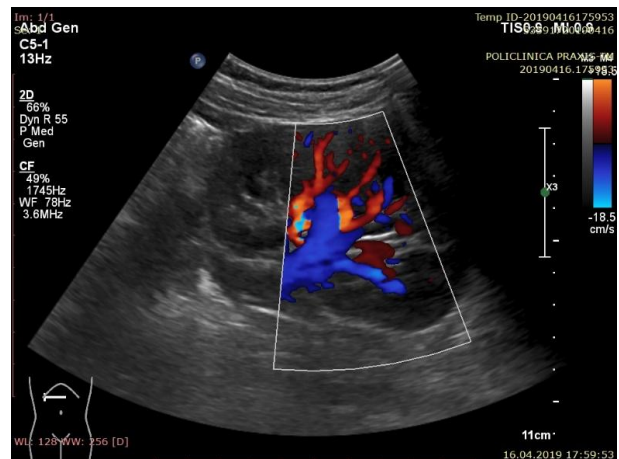
6.1.1 Normal kidney. Characteristic oval bean-shape. The parenchyma is hypoechoic and homogenous. The renal sinus is hyperechoic and is composed of calyces, the renal pelvis, fat and the major intrarenal vessels. (longitudinal section).



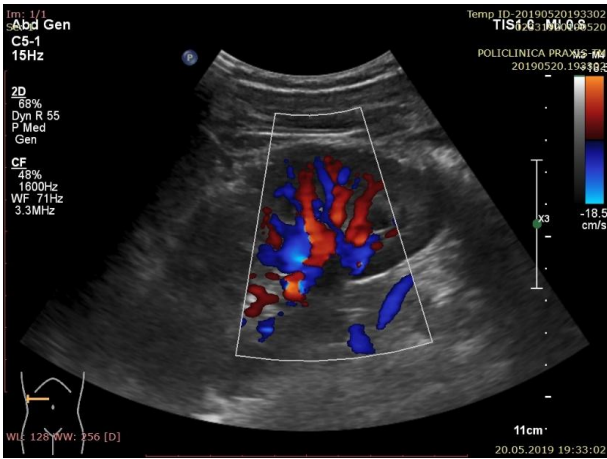
6.1.2 Normal kidney. Characteristic oval bean-shape. The parenchyma is hypoechoic and homogenous. The renal sinus is hyperechoic.



6.1.3 Normal kidney. Doppler examination showing normal renal perfusion.



6.1.4 Normal kidney. Doppler examination showing normal renal perfusion.



6.1.5 Normal kidney. Doppler examination showing normal renal perfusion.



6.1.6 Normal kidney. Characteristic oval bean-shape. The parenchyma is hypoechoic and homogenous. The renal sinus is hyperechoic and is composed of calyces, the renal pelvis, fat and the major intrarenal vessels (longitudinal section).



6.1.7 Normal kidney. Characteristic oval bean-shape. The parenchyma is hypoechoic and homogenous. The renal sinus is hyperechoic and is composed of calyces, the renal pelvis, fat and the major intrarenal vessels (longitudinal section).



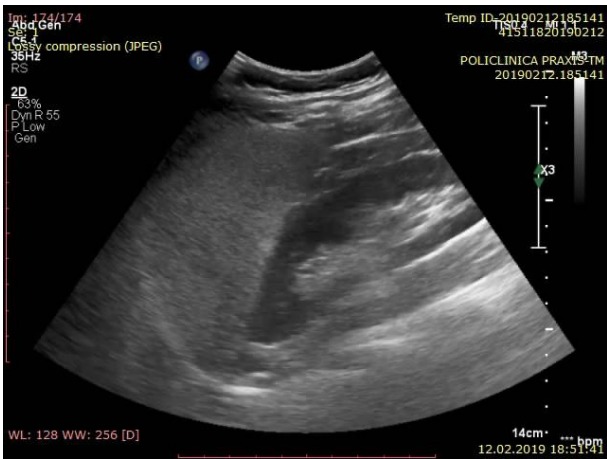
6.1.8 Normal kidney. Characteristic oval bean-shape. The parenchyma is hypoechoic and homogenous. The renal sinus is hyperechoic and is composed of calyces, the renal pelvis, fat and the major intrarenal vessels (longitudinal section).



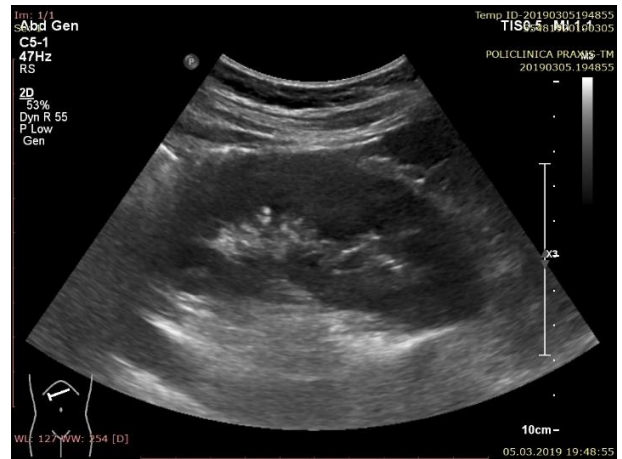
6.1.9 Normal kidney. Characteristic oval bean-shape. The parenchyma is hypoechoic and homogenous. The renal sinus is hyperechoic and is composed of calyces, the renal pelvis, fat and the major intrarenal vessels (longitudinal section).



6.1.10 Normal kidney. Characteristic oval bean-shape. The parenchyma is hypoechoic and homogenous. The renal sinus is hyperechoic and is composed of calyces, the renal pelvis, fat and the major intrarenal vessels (longitudinal section).



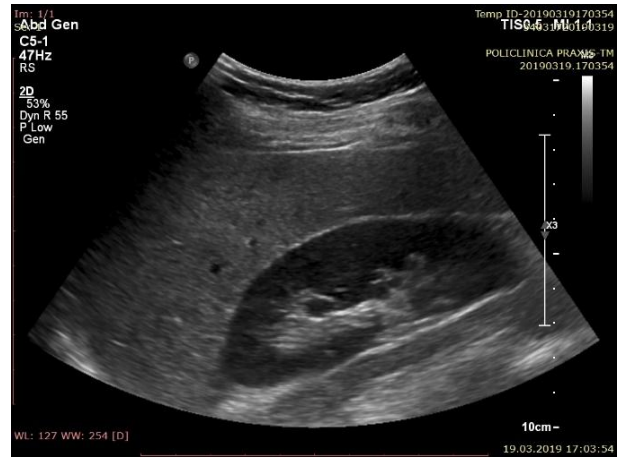
6.1.11 Normal kidney. Characteristic oval bean-shape. The parenchyma is hypoechoic and homogenous. The renal sinus is hyperechoic and is composed of calyces, the renal pelvis, fat and the major intrarenal vessels (longitudinal section).



6.1.12 Normal kidney. Characteristic oval bean-shape. The parenchyma is hypoechoic and homogenous. The renal sinus is hyperechoic and is composed of calyces, the renal pelvis, fat and the major intrarenal vessels.



6.1.13 Normal kidney. Characteristic oval bean-shape, normal size in longitudinal axis. The parenchyma is hypoechoic and homogenous. The renal sinus is hyperechoic and is composed of calyces, the renal pelvis, fat and the major intrarenal vessels.



6.1.14 Normal kidney. Characteristic oval bean-shape. The parenchyma is hypoechoic and homogenous. The renal sinus is hyperechoic and is composed of calyces, the renal pelvis, fat and the major intrarenal vessels (longitudinal section).



6.1.15 Normal kidney. Characteristic oval bean-shape. The parenchyma is hypoechoic and homogenous. The renal sinus is hyperechoic and is composed of calyces, the renal pelvis, fat and the major intrarenal vessels (longitudinal section).



6.1.16 Normal kidney. Variant anatomy. Persistent fetal lobulation- incomplete fusion of the developing renal lobules. It is a normal variant seen occasionally in adult kidneys.



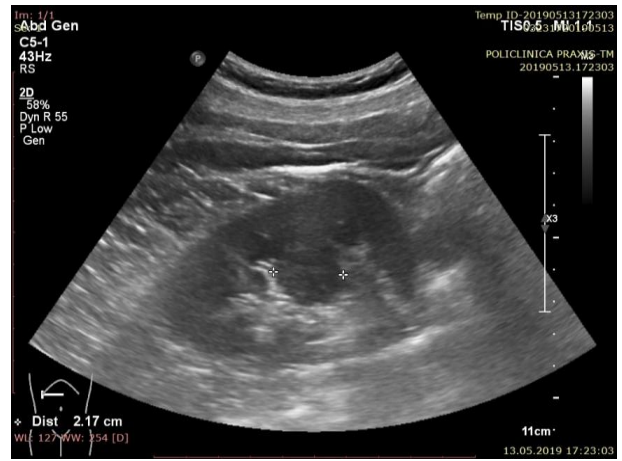
6.1.17 Normal kidney. Variant anatomy. Duplex collecting system.



6.1.18 Normal kidney. Variant anatomy. Duplex collecting system.

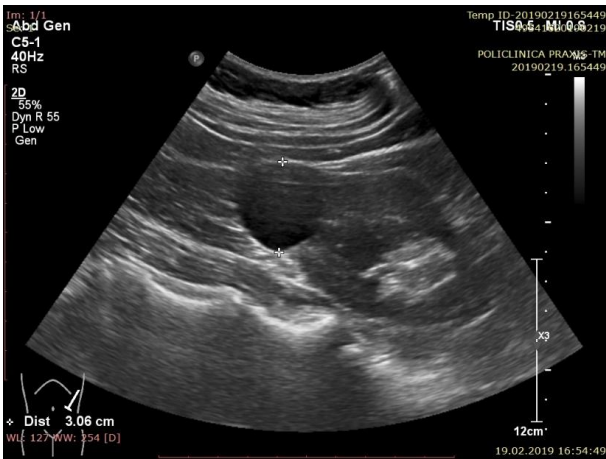


6.1.19 Normal kidney. Variant anatomy. Hypertrophied column of Bertin.

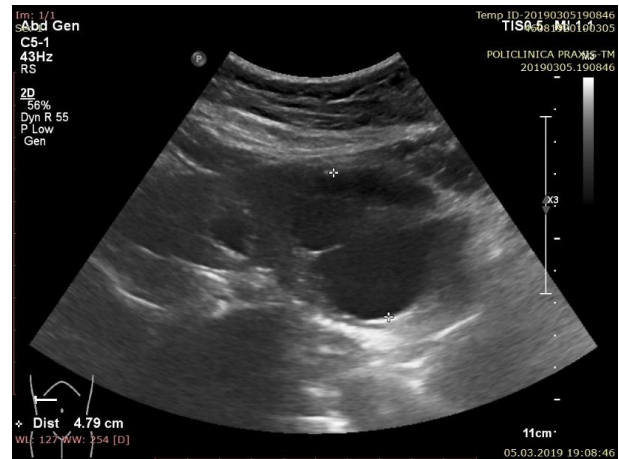


6.1.20 Normal kidney. Variant anatomy. Hypertrophied column of Bertin.

6.2 Kidneys – simple cysts and autosomal polycystic kidney disease.



6.2.1 Simple renal cyst. Cortical renal cyst - well-delineated anechoic lesion with thin walls.



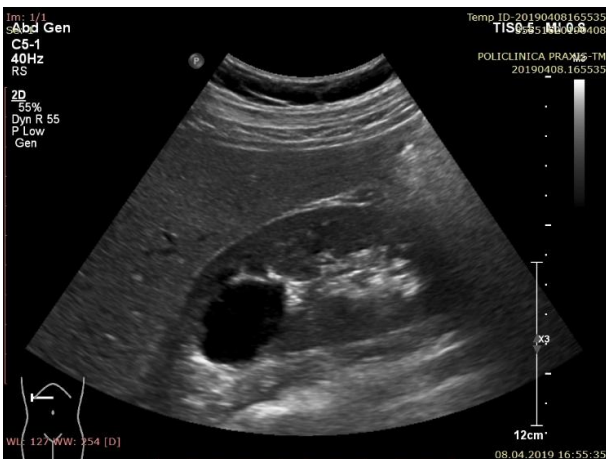
6.2.2 Simple renal cyst. Well-delineated anechoic lesion with thin walls.



6.2.3 Simple renal cysts. Well-delineated parapelvic small anechoic lesions with thin walls.



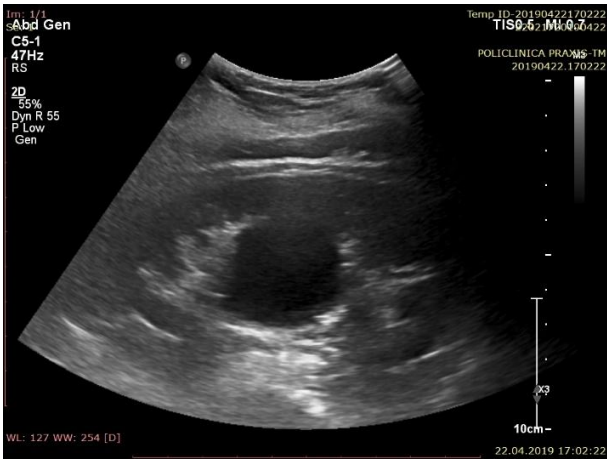
6.2.4 Simple renal cyst. Well-delineated anechoic lesion with thin walls and posterior acoustic enhancement, 3.6 cm in size.



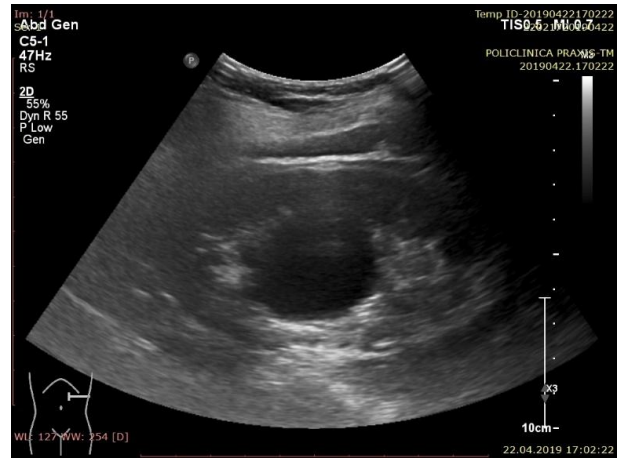
6.2.5 Simple renal cyst. Well-delineated anechoic lesion with thin walls and posterior acoustic enhancement.



6.2.6 Simple renal cyst. Well-delineated anechoic lesion with thin walls, 3.2 cm in size.



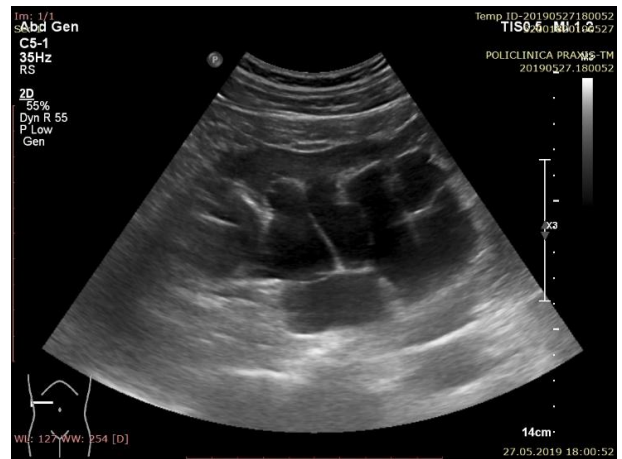
6.2.7 Simple renal cyst. Medio-renal well-delineated anechoic lesion with thin walls and posterior acoustic enhancement.



6.2.8 Simple renal cyst. Well-delineated anechoic lesion with thin walls.



6.2.9 Simple renal cyst. Cortical renal cyst - well-delineated anechoic lesion with thin walls.



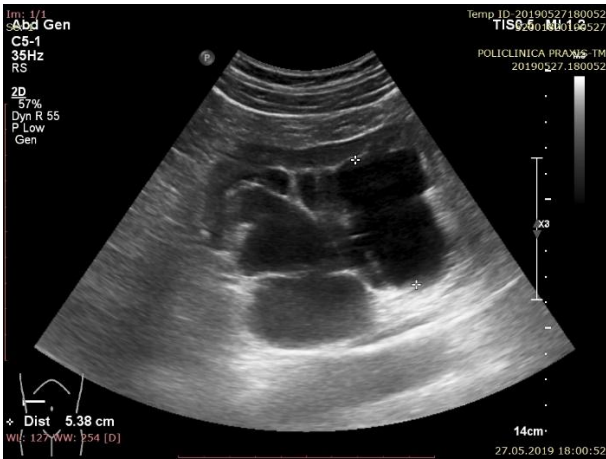
6.2.10 Multiple renal para-pelvic cysts. Multiple para-pelvic anechoic lesions with thin, irregular walls.



6.2.11 Multiple renal para-pelvic cysts. Multiple para-pelvic anechoic lesions with thin walls.



6.2.12 Multiple renal para-pelvic cysts. Multiple para-pelvic anechoic lesions with thin walls.



6.2.13 Multiple renal para-pelvic cysts. Multiple para-pelvic anechoic lesions with thin walls.



6.2.14 Polycystic kidney disease. Large, poorly circumscribed kidney, with the presence of numerous renal cysts of variable sizes. The ultrasound appearance suggests grape clusters. The pyelum is not visible; the whole kidney is changed into a cystic mass.



6.2.15 Polycystic kidney disease. Large, poorly circumscribed kidney, with the presence of numerous renal cysts of variable sizes. The ultrasound appearance suggests grape clusters. The pyelum is not visible; the whole kidney is changed into a cystic mass.

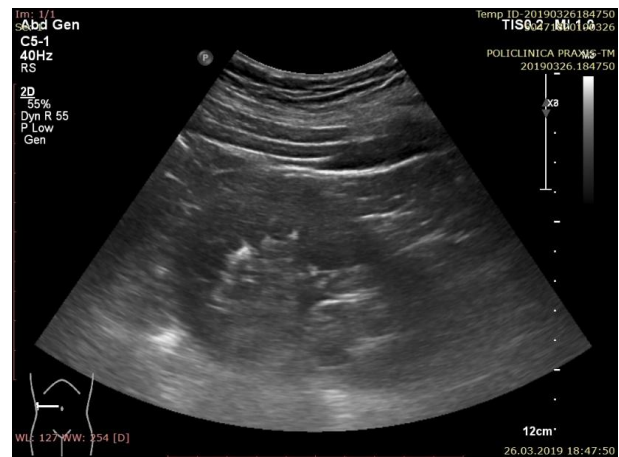


6.2.16 Polycystic kidney disease. Large, poorly circumscribed kidney, with the presence of numerous renal cysts of variable sizes. The ultrasound appearance suggests grape clusters. The pyelum is not visible; the whole kidney is changed into a cystic mass.

6.3 Kidneys – stones.



6.3.1 Kidney stone. Hyperechoic renal stone, approximately 1.2 cm in size, with posterior acoustic shadowing.



6.3.2 Kidney stone. Subcentimetric hyperechoic renal stone with posterior acoustic shadowing.



6.3.3 Kidney stone. Medio renal hyperechoic stone with posterior acoustic shadowing.



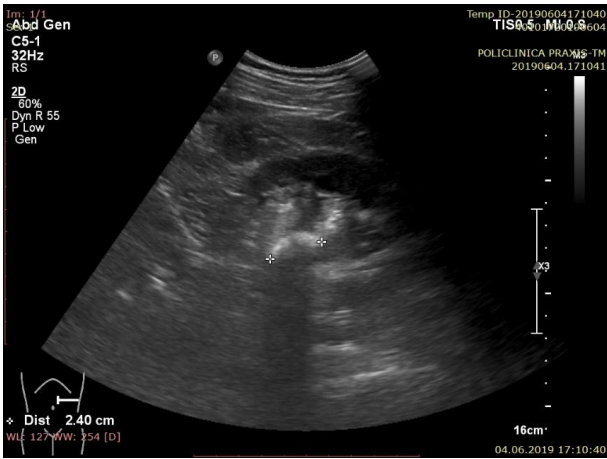
6.3.4 Kidney stone. Small hyperechoic renal stone with posterior acoustic shadowing.



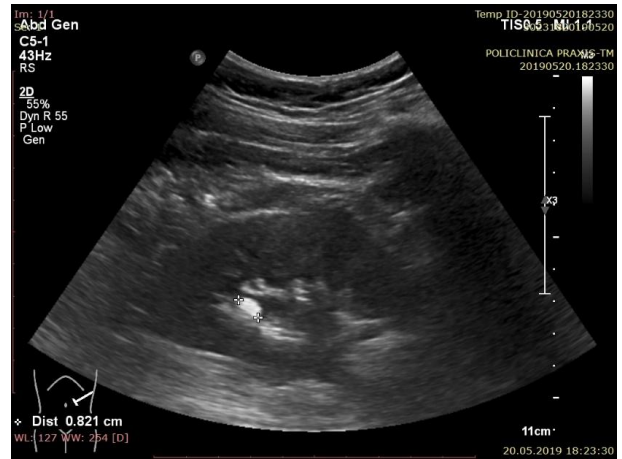
6.3.5 Kidney stone. Small hyperechoic renal stone. Hypertrophied column of Bertin



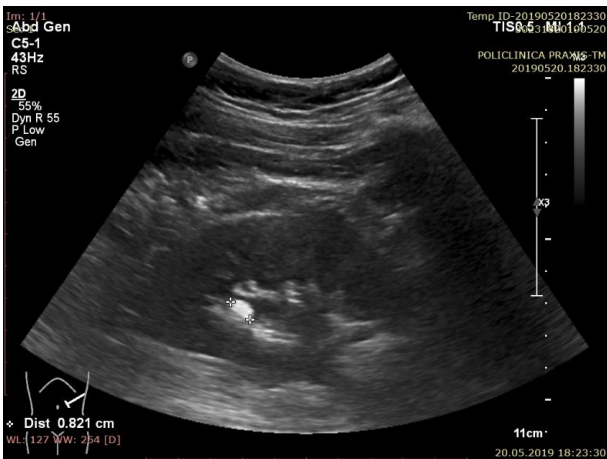
6.3.6 Kidney large stone. Hyperechoic large renal stone, approximately 2.4 cm in size, with posterior acoustic shadowing.



6.3.7 Kidney large stone. Hyperechoic large renal stone, approximately 2.4 cm in size, with posterior acoustic shadowing.



6.3.8 Kidney stone. Hyperechoic renal stone, approximately 1.2 cm in size, with posterior acoustic shadowing.



6.3.9 Kidney stone. Hyperechoic renal stone, approximately 0.8 cm in size, with posterior acoustic shadowing.



6.3.10 Kidney stones. Hyperechoic renal stones with posterior acoustic shadowing.

6.4 Kidneys – hydronephrosis.



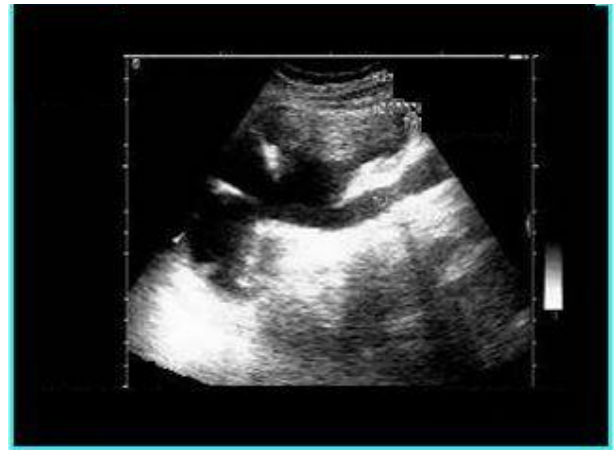
6.4.1 Hydronephrosis. Dilatation of the urinary collecting system, moderate dilatation of the renal pelvis and calyces, mild cortical thinning.



6.4.2 Hydronephrosis. Dilatation of the urinary collecting system moderate dilatation of the renal pelvis and calyces, mild cortical thinning.



6.4.3 Hydronephrosis. Mild dilation of the renal pelvis, with a normal size cortex. Hyperechoic renal stones with posterior acoustic shadowing.



6.4.4 Hydronephrosis. Severe dilatation of the renal pelvis, with the presence of a significantly thinned cortex. Hydro ureter.



6.4.5 Hydronephrosis. Moderate dilatation of the renal pelvis and calyces, mild cortical thinning.



6.4.6 Hydronephrosis. Mild dilation of the renal pelvis, with a normal size cortex.

6.5 Kidneys – tumors.



6.5.1 Angiomyolipoma. Benign solid renal lesion – hyperechoic lesion, approximately. 2.2 cm in size, located in the cortex.



6.5.2 Angiomyolipoma. Benign solid renal lesion – small hyperechoic lesion located in the cortex.



6.5.3 Angiomyolipoma. Benign solid renal lesion – small hyperechoic lesion located in the cortex.



6.5.4 Renal tumor. Left renal tumor – hypoechoic lesion, approximately 5.5 cm in size located at the superior renal pole.



6.5.5 Renal tumor. Right medio renal tumor – hypoechoic lesion, approximately 4.5 cm in size.



6.5.6 Renal tumor. Large right renal tumor – hypoechoic, inhomogeneous lesion located at the inferior renal pole.



6.5.7 Renal tumor. Left renal tumor – hypoechoic lesion, approximately 4.7 cm in size.



6.5.8 Renal tumor. Left renal tumor- hypoechoic, inhomogeneous lesion, approximately 6 cm in size, located at the inferior renal pole.

6.6. Renal failure



6.6.1 Acute renal failure. Large kidney, increased parenchymal thickness.



6.6.2 Acute renal failure. Large kidney, increased parenchymal thickness.



6.6.3 Acute renal failure. Large kidney, increased parenchymal thickness.



6.6.4 Chronic kidney disease. Reduced renal cortical thickness reduced renal length, increased cortical echogenicity, poor visibility of the renal pyramids and the renal sinus, marginal irregularities.



6.6.5 Chronic kidney disease. Reduced renal cortical thickness reduced renal length, increased cortical echogenicity, poor visibility of the renal pyramids and the renal sinus, marginal irregularities.

6.7 Kidneys – video images.

6.7.1 Normal kidney. Characteristic oval bean-shape. The parenchyma is hypoechoic and homogenous. The renal sinus is hyperechoic and is composed of calyces, the renal pelvis, fat and the major intrarenal vessels (longitudinal section). Mild liver steatosis.	https://youtu.be/auZUNOS1zso
6.7.2 Normal kidney. Characteristic oval bean-shape. The parenchyma is hypoechoic and homogenous. The renal sinus is hyperechoic and is composed of calyces, the renal pelvis, fat and the major intrarenal vessels (longitudinal section). Mild liver steatosis.	https://youtu.be/-lWwlTa2VXc
6.7.3 Normal kidney. Characteristic oval bean-shape. The parenchyma is hypoechoic, homogenous and the renal sinus is hyperechoic	https://youtu.be/f1hM9SvPq2Q
6.7.4 Normal kidney. Doppler examination showing normal renal perfusion.	https://youtu.be/ssxcZYkY_tU
6.7.5 Normal kidney. Doppler examination showing normal renal perfusion.	https://youtu.be/3FdIpaKO5Wo
6.7.6 Normal kidney. Doppler examination showing normal renal perfusion.	https://youtu.be/fjOPJWut6C4
6.7.7 Normal kidney. Variant anatomy. Hypertrophied column of Bertin.	https://youtu.be/6-AxLpxiriY
6.7.8 Normal kidney. Variant anatomy. Hypertrophied column of Bertin.	https://youtu.be/qbSgrmCXbdl
6.7.9 Normal kidney. Variant anatomy. Duplex collecting system	https://youtu.be/BUN9W4z2Bak
6.7.10 Simple renal cyst. Cortical renal cyst - well-delineated anechoic lesion with thin walls.	https://youtu.be/On3o5_InwkA
6.7.11 Simple renal cyst. Cortical renal cyst - well- delineated anechoic lesion with thin walls located at the superior renal pole.	https://youtu.be/7u7_EwZgZlY
6.7.12 Simple renal cyst. Cortical renal cyst - well- delineated anechoic lesion with thin walls.	https://youtu.be/NV-Wn3XMwhE
6.7.13 Multiple renal para-pelvic cysts. Multiple para-pelvic anechoic lesions with thin walls.	https://youtu.be/h0lwFI5GrVo
6.7.14 Multiple renal para-pelvic cysts. Multiple para-pelvic anechoic lesions with thin walls.	https://youtu.be/za6FjsucJ_o

6.7.15 Multiple renal para-pelvic cysts. Multiple para-pelvic anechoic lesions with thin walls.	https://youtu.be/vwFjbzEry7Y
6.7.16 Polycystic kidney disease. Large, poorly circumscribed kidney, with the presence of numerous renal cysts of variable sizes. The ultrasound appearance suggests grape clusters. The pyelum is not visible; the whole kidney is changed into a cystic mass.	https://youtu.be/nVbX96k5SGI
6.7.17 Polycystic kidney disease. Large, poorly circumscribed kidney, with the presence of numerous renal cysts of variable sizes. The ultrasound appearance suggests grape clusters. The pyelum is not visible; the whole kidney is changed into a cystic mass.	https://youtu.be/We_qRV1Nt4s
6.7.18 Horseshoe kidney. Renal fusion anomaly. We can observe the presence of the isthmus and its continuity with the lower poles.	https://youtu.be/HjoncMX3Ngg
6.7.19 Kidney stone. Subcentimetric hyperechoic renal stone with posterior acoustic shadowing.	https://youtu.be/D8yMBNx3Znl
6.7.20 Kidney stone. Small hyperechoic renal stone with posterior acoustic shadowing.	https://youtu.be/cgTejL7NADY
6.7.21 Kidney stone. Small hyperechoic renal stone with posterior acoustic shadowing.	https://youtu.be/QyDILtwpapE
6.7.22 Kidney large stone. Hyperechoic large renal stone, approximately 2.4 cm in size, with posterior	https://youtu.be/DYF6gyP4bIM
6.7.23 Kidney large stone. Hyperechoic renal stone, approximately 2 cm in size, with posterior acoustic shadowing.	https://youtu.be/uCq_8jzoAf8
6.7.24 Nephrocalcinosis. Multiple hyperechoic images with posterior shadowing -deposition of calcium salts in the parenchyma of the kidney.	https://youtu.be/6pR9NjQe0Y8
6.7.25 Hydronephrosis. Moderate dilatation of the renal pelvis and calyces, mild cortical thinning.	https://youtu.be/KtnggcrgbuY
6.7.26 Hydronephrosis. Moderate dilatation of the renal pelvis and calyces, mild cortical thinning. Schwannoma – hypoechoic tumor with small anechoic areas.	https://youtu.be/SR-GcFf-RIs
6.7.27 Angiomyolipoma. Benign solid renal lesion – small hyperechoic lesion located in the cortex.	https://youtu.be/lr9qZc87NLw
6.7.28 Angiomyolipoma. Benign solid renal lesion – small hyperechoic lesion located in the cortex.	https://youtu.be/HrjqJDfRNSs

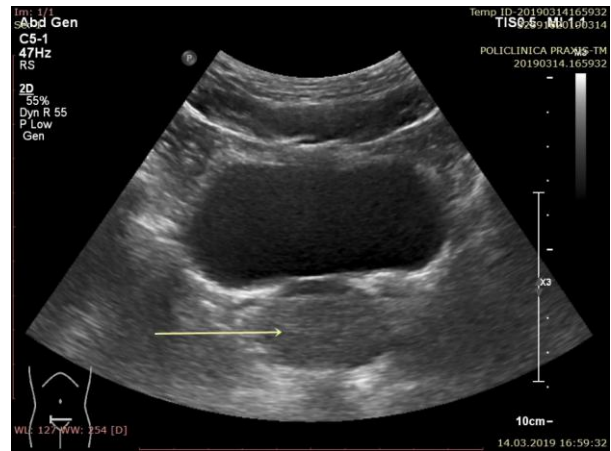
6.7.29 Angiomyolipoma. Benign solid renal lesion – small hyperechoic lesion located in the cortex.	https://youtu.be/NH0dSWfCVOg
6.7.30 Renal tumor. Right medio-renal tumor – hypoechoic lesion, approximately 4.5 cm in size.	https://youtu.be/f_JEzo87Zr4
6.7.31 Renal tumor. Left renal tumor – hypoechoic lesion, approximately 4.7 cm in size.	https://youtu.be/zmOT5KtEsNA
6.7.32 Renal tumor. Large left renal tumor- hypoechoic, inhomogeneous lesion, approximately 6 cm in size, located at the inferior renal pole.	https://youtu.be/WJ7U9iZMh3w
6.7.33 Renal abscess. Medio-renal two well-defined hypoechoic/transonic areas within the cortex and in the cortico-medullary parenchyma.	https://youtu.be/0mWS-fTS-vU
6.7.34 Renal tumor. Right renal tumor – hyperechoic lesion, approximately 4.5 cm in size, located at the inferior renal pole.	https://youtu.be/G39HQhNkGgg

Chapter 7 Pelvis Ultrasound

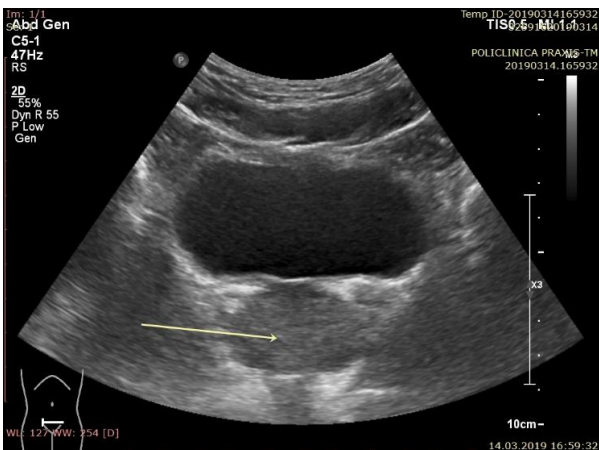
7.1 . Prostate- normal aspects



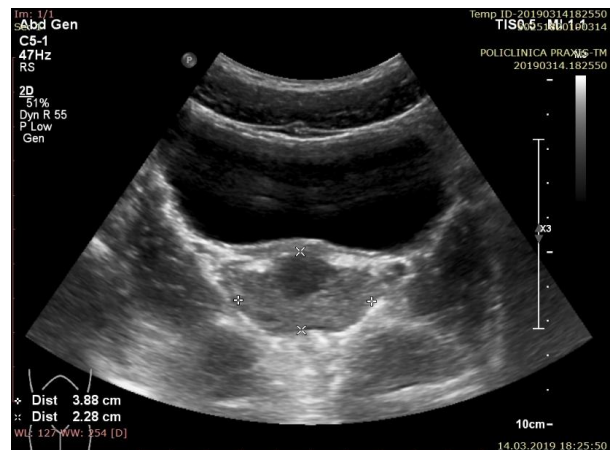
7.1.1 Normal prostate: Transverse section of the prostate that is easily depicted beneath the urinary bladder.



7.1.2 Normal prostate: Transverse section of the prostate that is easily depicted beneath the urinary bladder.



7.1.3 Normal prostate: Transverse section of the prostate that is easily depicted beneath the urinary bladder.



7.1.4 Normal prostate: Transverse section of the prostate that is easily depicted beneath the urinary bladder.

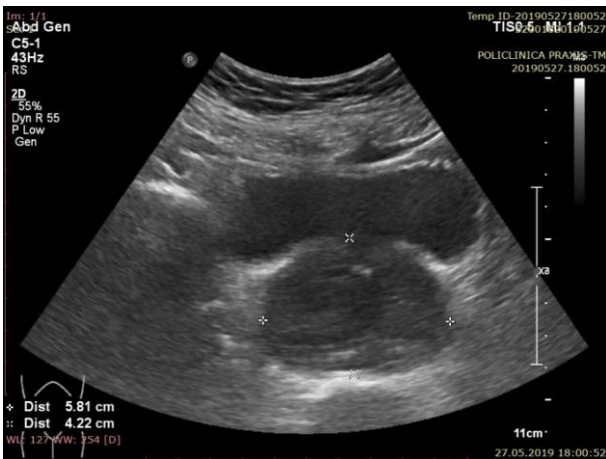


7.1.5 Normal prostate: Transverse section of the prostate that is easily depicted beneath the urinary bladder.

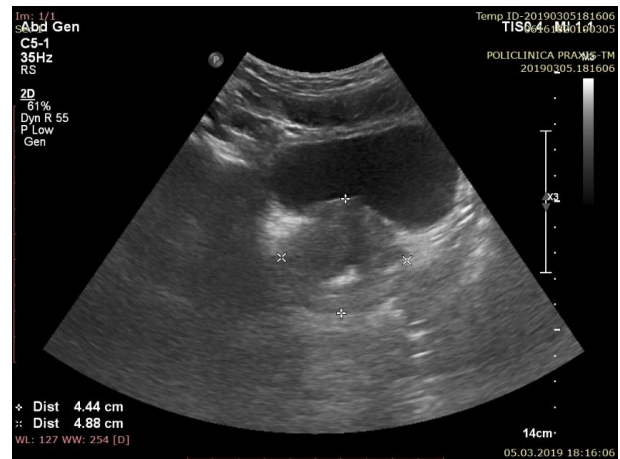


7.1.6 Normal prostate: Transverse section of the prostate that is easily depicted beneath the urinary bladder.

7.2. Prostate- pathology



7.2.1 Enlarged prostate: Supra-pubic
Transverse section of the prostate that is bulking the urinary bladder.



7.2.2 Enlarged prostate: Supra-pubic
Transverse section of the prostate that is bulking the urinary bladder.

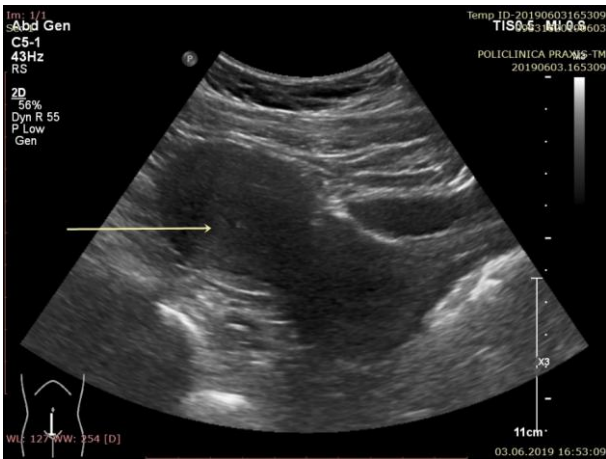


7.2.3 Enlarged prostate: Supra-pubic
Transverse section of the prostate that is bulking the urinary bladder.

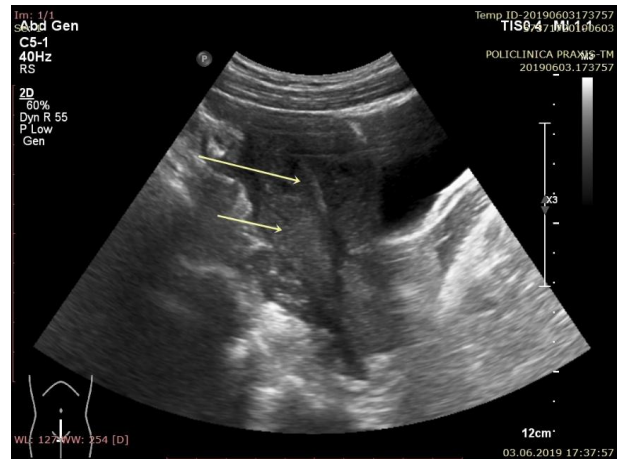


7.2.4 Enlarged prostate: Supra-pubic
Transverse section of the prostate that is bulking the urinary bladder and a small calcification in the center (yellow arrow).

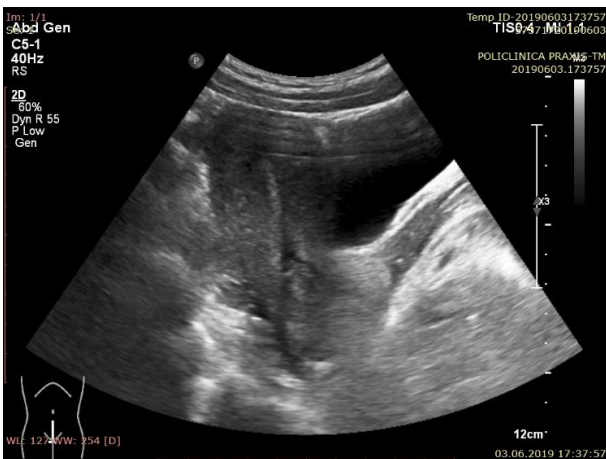
7.3. Uterus & Ovaries - normal aspect



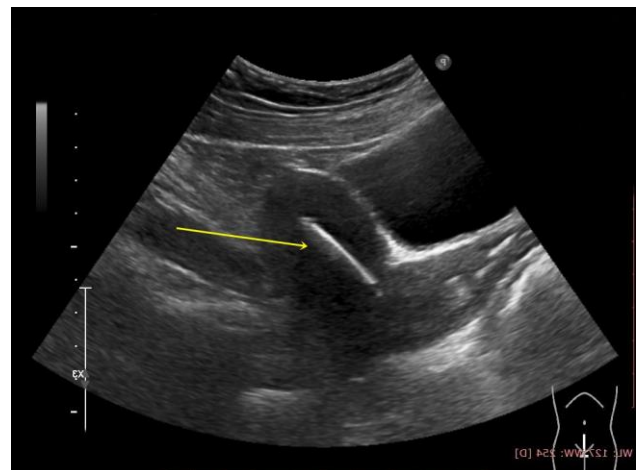
7.3.1 Uterus in the longitudinal axis section: Supra-pubic longitudinal section of the uterus that comes in contact with the urinary bladder. We can also measure the length of the uterus.



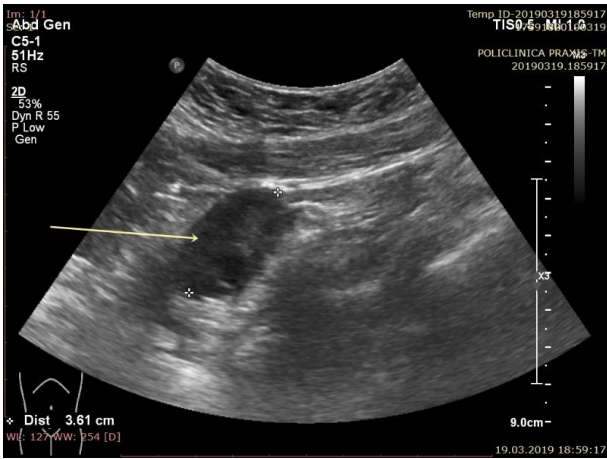
7.3.2 Uterus in the longitudinal axis section: Supra-pubic longitudinal section of the uterus that comes in contact with the urinary bladder. We can also depict the endometrium and myometrium (yellow arrow).



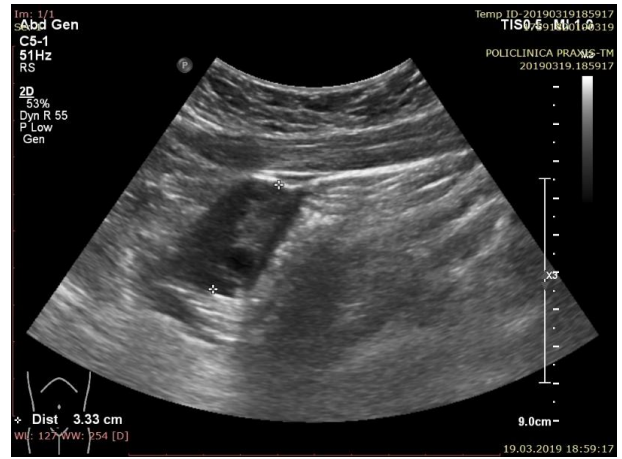
7.3.3 Uterus in the longitudinal axis section: Supra-pubic longitudinal section of the uterus that comes in contact with the urinary bladder.



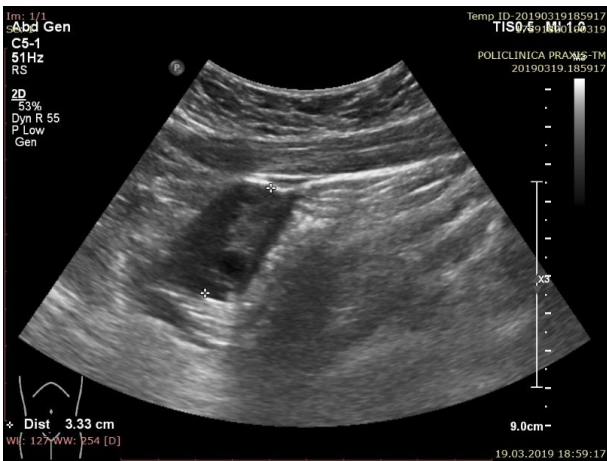
7.3.4 Uterus in the longitudinal axis section with a caudal orientation where we can depict an intrauterine device.



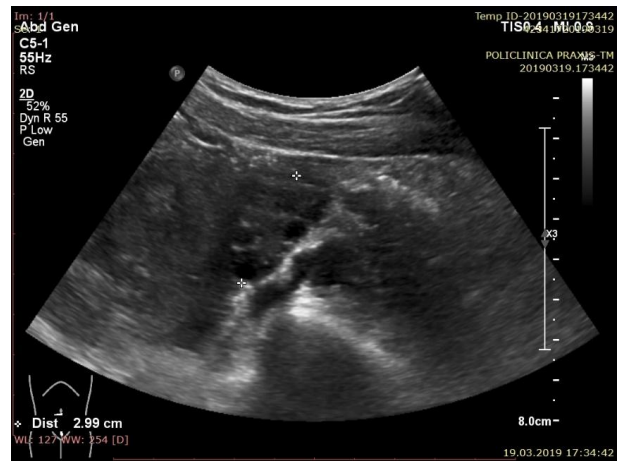
7.3.5 Ovary in the longitudinal axis section where you can measure the length and the antero-posterior dimension.



7.3.6 Ovary in the longitudinal axis section where you can measure the length and antero-posterior dimension.

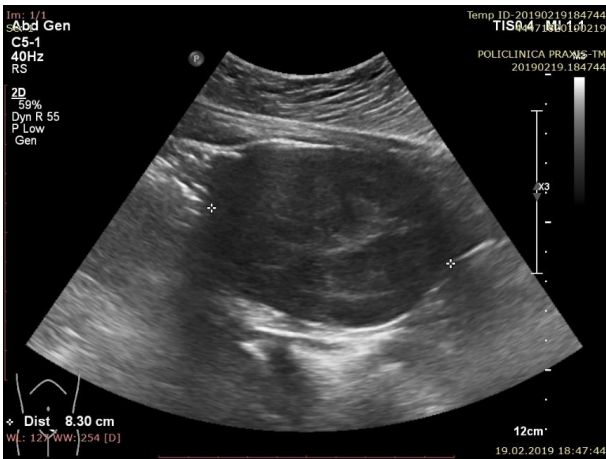


7.3.7 Right Ovary in the longitudinal axis section where you can measure the length and antero-posterior dimension.

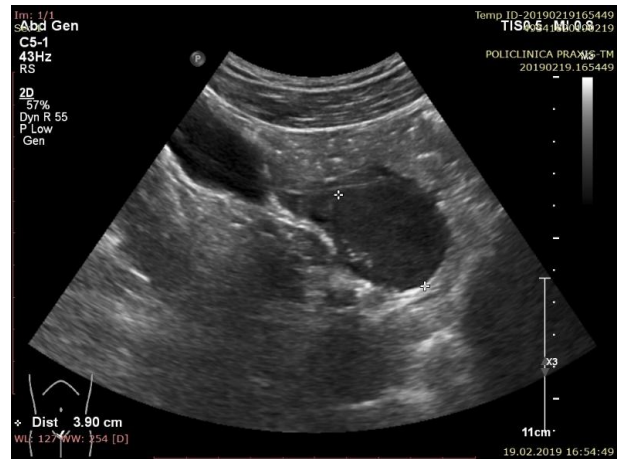


7.3.8 Left Ovary in the longitudinal axis section where you can measure the length and antero-posterior dimension.

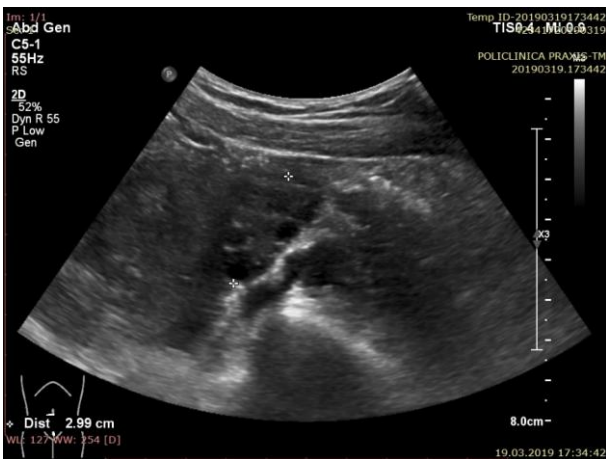
7.4. Uterus & Ovaries- pathology



7.4.1 Uterus in the longitudinal axis section, where we can depict an enlargement of the uterus body (possible a fibroma).

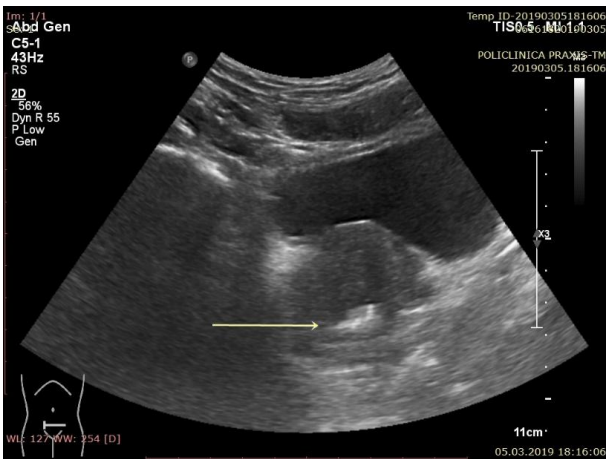


7.4.2 Left Ovary in the longitudinal axis section where we can depict an echogenic aspect of the ovary that could suggest a hemorrhagic cyst.

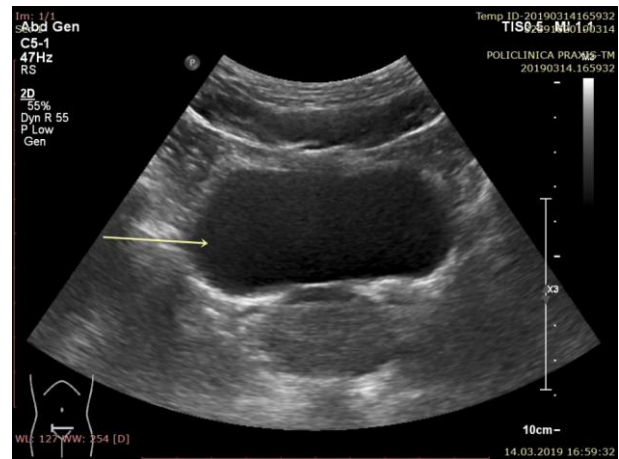


7.4.3 Left Ovary in the longitudinal axis section where we can depict a polycystic ovary.

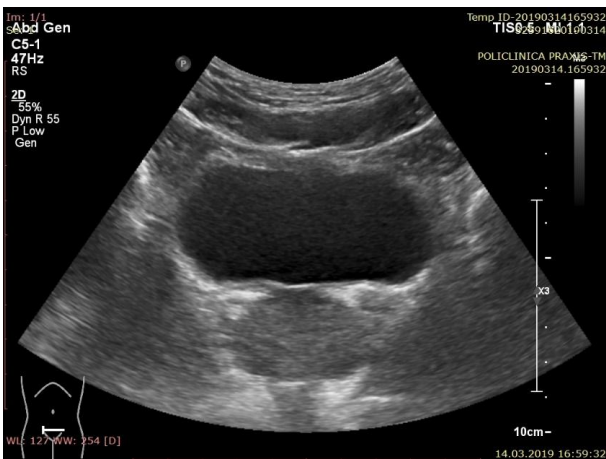
7.5. Urinary Bladder- normal aspect



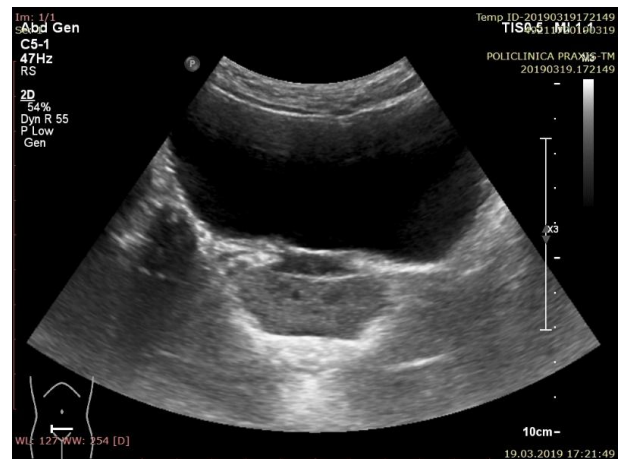
7.5.1 Urinary Bladder is highlighted in a transverse section. Beneath the UB, we can depict an enlarged prostate with a calcification inside (arrow).



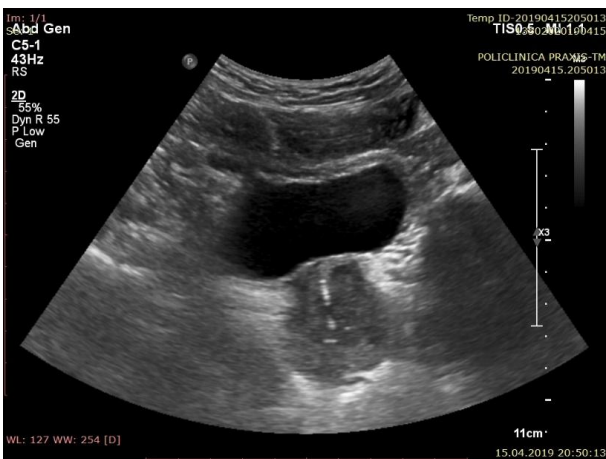
7.5.2 Urinary Bladder is highlighted in a transverse section (arrow).



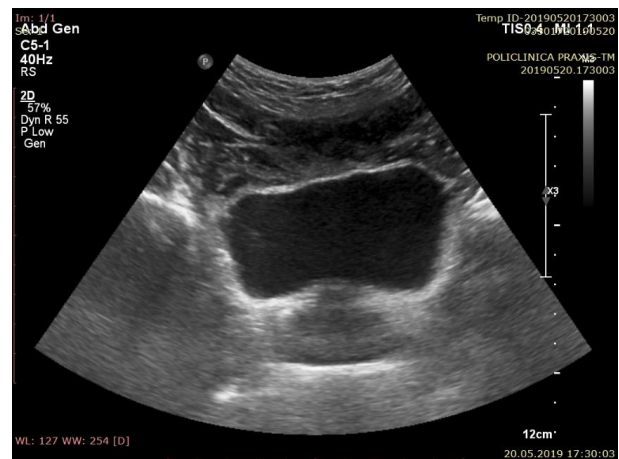
7.5.3 Urinary Bladder is highlighted in a transverse section.



7.5.4 Distended Urinary Bladder in a Transverse section.



7.5.5 Urinary Bladder is highlighted in a transverse section.

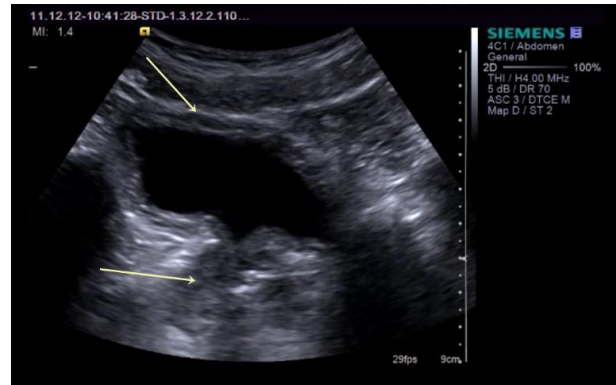


7.5.6 Urinary Bladder is highlighted in a transverse section.

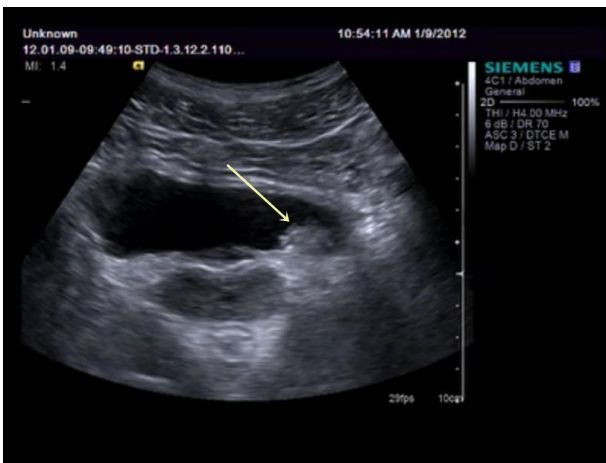
7.6. Urinary Bladder – pathology



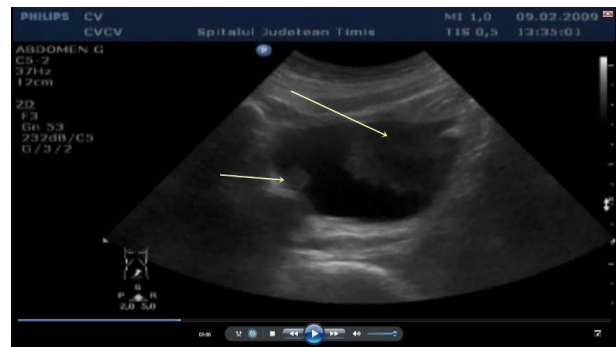
7.6.1 Urinary Bladder is depicted in longitudinal section where we can observe a hyperechoic lesion (stone) in the lower part (upper arrow). The lower arrow shows us ascites in Douglas pouch.



7.6.2 Urinary Bladder is depicted in a transverse section. We can observe the thickened UB walls (upper arrow) secondary to a chronic obstruction at the prostate level (lower arrow), which appears to be intensely heterogeneous.



7.6.3 Urinary Bladder is depicted in a transverse section. We can observe a polypoid structure inside the UB (arrow).



7.6.4 Urinary Bladder is depicted in a transverse section. We can observe two polypoid structures inside the UB raising the suspicion of a UB cancer.

7.7. Pelvis- video images

Video 7.7.1 Normal prostate: Transverse section of the prostate that is easily depicted beneath the urinary bladder. Scanning in Transverse section.	https://youtu.be/BzHSqzXhr4c
Video 7.7.2 Normal prostate: Transverse section of the prostate that is easily depicted beneath the urinary bladder. Scanning in Transverse section.	https://youtu.be/YbsLb394n3Q
Video 7.7.3 Enlarged prostate: Supra-pubic Transverse section of the prostate that is bulking the urinary bladder. Scanning in Transverse section.	https://youtu.be/Hc5Nozd9BNs
Video 7.7.4 Enlarged prostate: Supra-pubic Transverse section of the prostate that is bulking the urinary bladder. Scanning in Transverse section.	https://youtu.be/qKWepqZIFF0
Video 7.7.5 Enlarged prostate: Supra-pubic Transverse section of the prostate that is bulking the urinary bladder. Scanning in Transverse section.	https://youtu.be/voiDsO1OY_U
Video 7.7.6 Enlarged prostate: Supra-pubic Transverse section of the prostate that is bulking the urinary bladder. Scanning in Transverse section.	https://youtu.be/qKWepqZIFF0
Video 7.7.7 Enlarged prostate: Supra-pubic Transverse section of the prostate that is bulking the urinary bladder. We can depict some diverticula and a thickened wall of the urinary bladder secondary to chronic obstruction of the bladder by the increased prostate.	https://youtu.be/ZwKegi_Mcrs
Video 7.7.8 Enlarged prostate: Supra-pubic Transverse section of the prostate that is bulking the urinary bladder. We can depict a thickened wall of the urinary bladder secondary to chronic obstruction of the bladder by the increased prostate.	https://youtu.be/q5Mvk5tw09s
Video 7.7.9 Uterus in the longitudinal axis section: Supra-pubic longitudinal section of the uterus that comes in contact with the urinary bladder. We can also measure the length of the uterus.	https://youtu.be/VFbJcYryBNU
Video 7.7.10 Uterus in the longitudinal axis section: Supra-pubic longitudinal section of the uterus that comes in contact with the urinary bladder. We can also measure the length of the uterus. At a careful evaluation, we can depict the endo-and myometrium.	https://youtu.be/t_HAM5fMPRc

Video 7.7.11 Uterus in the longitudinal axis section: Supra-pubic longitudinal section of the uterus that comes in contact with the urinary bladder. In the right side, we can also depict the vagina.	https://youtu.be/-HrXffBLpw0
Video 7.7.12 Uterus in the longitudinal axis section: Supra-pubic longitudinal section of the uterus that comes in contact with the urinary bladder. In the right side, we can also depict the vagina.	https://youtu.be/AdM3wdWZ9TU
Video 7.7.13 Uterus in the longitudinal axis section with a caudal orientation where we can depict an intrauterine device that appears to be intense hyper-echoic.	https://youtu.be/K26m6-zRwOU
Video 7.7.14 Ovary in the longitudinal axis section where you can measure the length and the antero-posterior dimension. In different planes we can see also the urinary bladder and the uterus.	https://youtu.be/14sQ8uWM2hs
Video 7.7.15 Ovary in the longitudinal axis section where you can measure the length and the antero-posterior dimension. In different planes, we can see also the urinary bladder and the uterus.	https://youtu.be/-hcQ-TeVQ5o
Video 7.7.16 Left Ovary in the longitudinal axis section. In different planes, we can see also the urinary bladder and the uterus. We can also depict an echogenic aspect of the ovary that could suggest a hemorrhagic cyst.	https://youtu.be/tjI38fjsBKU
Video 7.7.17 Left Ovary in the longitudinal axis section where we can depict a polycystic ovary and some bowel movements in the right.	https://youtu.be/EPPnZfPn0bE
Video 7.7.18 Left Ovary in the longitudinal axis section where we can depict a polycystic ovary and some bowel movements in the right.	https://youtu.be/g2UdkED13sw
Video 7.7.19 Urinary Bladder is highlighted in a transverse section. We can notice the posterior amplification of the UB.	https://youtu.be/Rt5c-Cpjs-M
Video 7.7.20 Urinary Bladder is highlighted in a transverse section. We can notice the posterior amplification of the UB.	https://youtu.be/KpS3fajqtNM
Video 7.7.21 Urinary Bladder is highlighted in a Transverse section.	https://youtu.be/nwXNJlqiyk8
Video 7.7.22 Urinary Bladder is highlighted in a transverse section. We can notice the posterior amplification of the UB.	https://youtu.be/YbsLb394n3Q
Video 7.7.23 Urinary Bladder is highlighted in a transverse section. We notice a full urinary bladder.	https://youtu.be/BzHSqzXhr4c

Video 7.7.24 Urinary Bladder is highlighted in a transverse section. We can notice the posterior amplification of the UB and the layers of the UB wall.	https://youtu.be/UKoTJghsyMU
Video 7.7.25 Urinary Bladder is highlighted in a transverse section. Beneath the UB, we can depict an enlarged prostate with a calcification inside (hyperechoic lesion).	https://youtu.be/MJF8a6oN0pl
Video 7.7.26 Urinary Bladder is highlighted in a transverse section. We can notice the posterior amplification of the UB	https://youtu.be/Rt5c-Cpjs-M
Video 7.7.27 Urinary Bladder is highlighted in a transverse section. Beneath the UB, we can depict an enlarged prostate with a possible nodular structure inside (hypoechoic lesion).	https://youtu.be/BzHSgzXhr4c
Video 7.7.28 Urinary Bladder is highlighted in a transverse section. We can notice the posterior amplification of the UB.	https://youtu.be/MJF8a6oN0pl
Video 7.7.29 Urinary Bladder is highlighted in a transverse section. Beneath the UB, we can depict an enlarged heterogeneous prostate with calcification inside (hyperechoic lesion).	https://youtu.be/4xLduoc5RYw
Video 7.7.30 Urinary Bladder is depicted in longitudinal section where we can observe a hyperechoic lesion (stone) in the lower part. It can also be observed a minimum quantity of ascites in Douglas pouch.	https://youtu.be/TZqfnkznerw
Video 7.7.31 Urinary Bladder is depicted in a Transverse section. We can observe a polypoid structure inside the UB.	https://youtu.be/kzeEGV5OQqc
Video 7.7.32 Urinary Bladder is depicted in a transverse section. We can observe two polypoid structures inside the UB raising the suspicion of a UB cancer. The biggest lesion originates from the superior wall of the UB.	https://youtu.be/ubgmld59vCQ
Video 7.7.33 Urinary Bladder is depicted in a transverse section. We can observe the thickened UB walls secondary to a chronic obstruction at the prostate level, which appears to be intensely heterogeneous.	https://youtu.be/LwGT0gtFIEM