

WHAT IS POCUS?

Point of care
ultrasonography (POCUS) is
advanced diagnostic
ultrasonography that is
performed and interpreted
as a **bedside test**
Rapid diagnostic tool,
especially in acute care

THORAX

Pleural effusion, consolidation, pulmonary edema,
pneumothorax

HEART

Pericardial effusion, pericarditis, vena cava, cardiogenic shock

ABDOMEN

Cholelithiasis, appendicitis, FAST, urolithiasis, testicular
torsion / epididymo-orchitis, intussusception

VESSELS

Deep vein thrombosis, jugular thrombosis, ultrasound-guided
peripheral venous catheter, aorta abdominal aneurysm

US APPLICATIONS IN ACUTE CARE - THORAX

POSITION

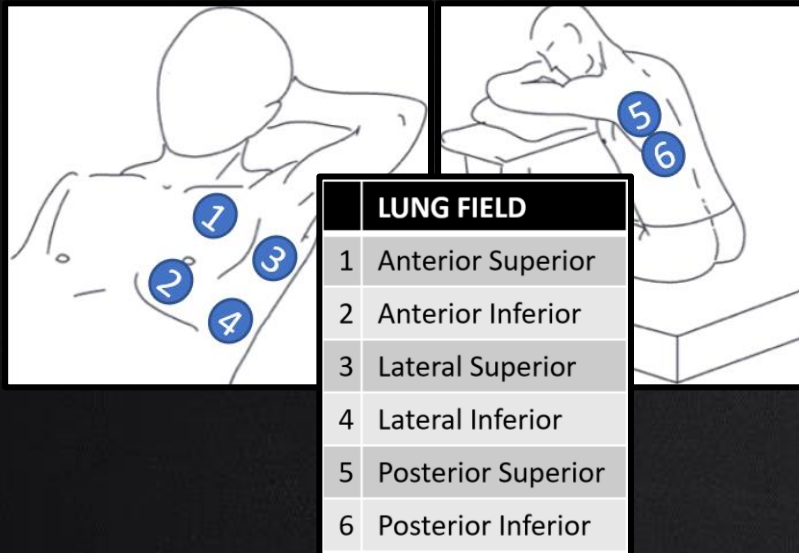


Fig 1: Position and the lung fields.

IMAGE ACQUISITION

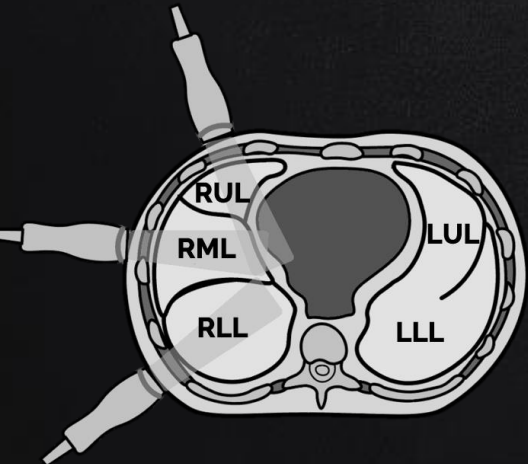


Fig 2: Pulmonary lobes for image acquisition.

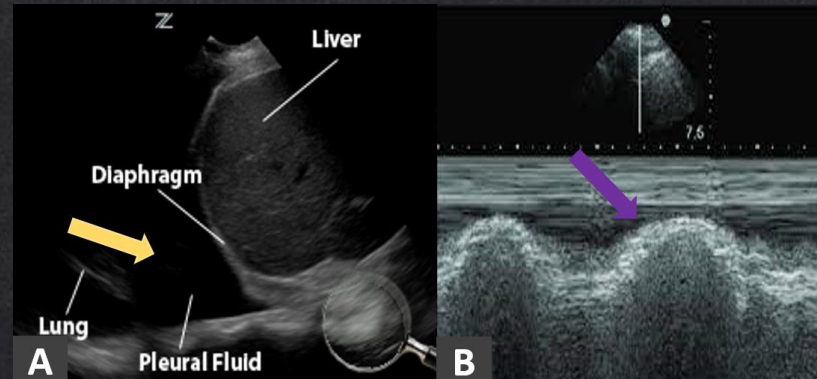


Fig 3: 73-year-old man presents with dyspnea. Lung ultrasound shows an anechoic collection in right pleural space, compatible with pleural effusion in B mode (A) - (yellow arrow) and in M mode where there is the sinusoid sign (B) - (purple arrow). This finding is a dynamic sonographic sign, present when respiratory variation decreases the distance between the parietal and visceral pleura, when separated by a pleural effusion.

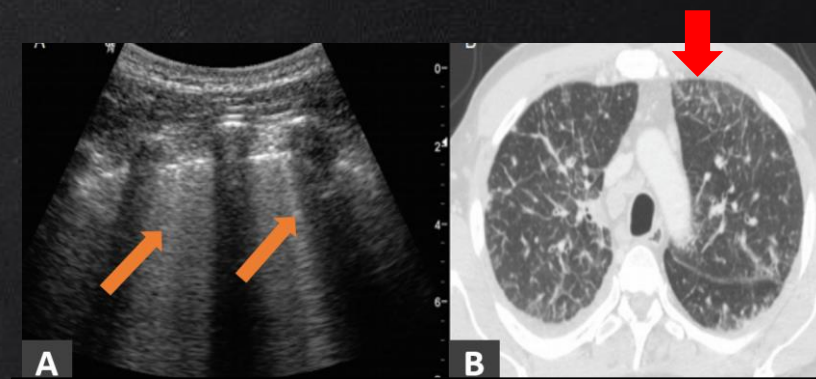


Fig 5: 75-year-old man with congestive cardiac failure. Lung ultrasound demonstrates multiple vertical (A) - (orange arrow) confluent streak-like hyperechogenic artefacts are visible around the left lung apex, arising from the pleural surface, which correspond to B lines. There is the lung CT correlation showing interlobular septal thickening (B) - (red arrow) in the same location.

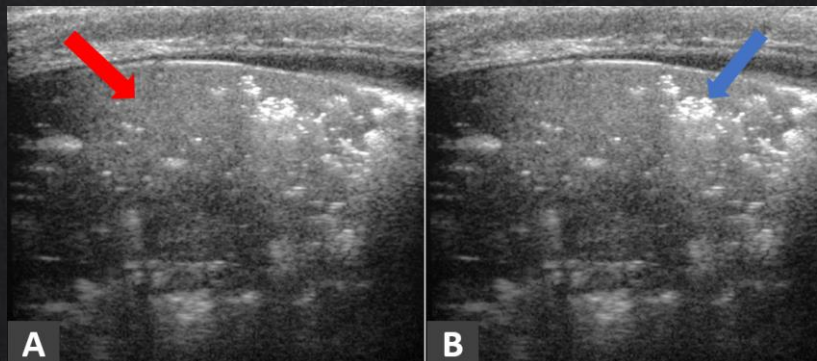


Fig 4: 39-year-old woman presents with dyspnea and fever four days ago. Lung ultrasound demonstrates a pulmonary hepatization (A) - (red arrow), used to describe pulmonary consolidation with echogenic points representative of air bronchogram (B) - (blue arrow).

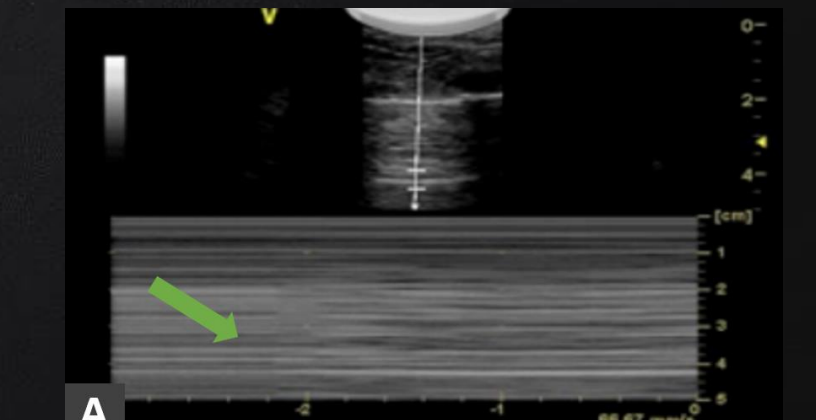


Fig 6: 80-year-old woman controlling pneumothorax in the left pleural space. There is an absence of pleural slipping, which entails the barcode/stratosphere sign (A) - (green arrow) showed in the M mode.

US APPLICATIONS IN ACUTE CARE - HEART

POSITION AND IMAGE ACQUISITION

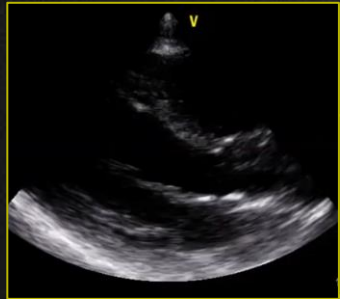


Fig 1: parasternal long axis (PLAX) view.

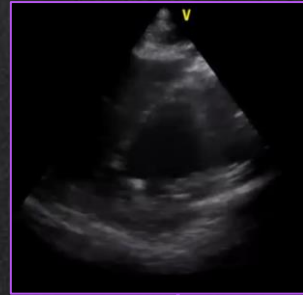


Fig 2: parasternal short axis (PSAX) view.

Long and short axis of the heart.



Fig 3: subcostal view.



Fig 4: apical four chamber view.

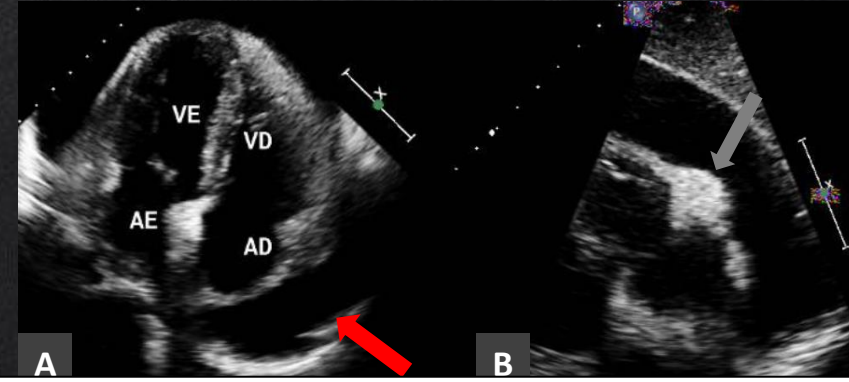


Fig 5: 33-year-old woman with antecedent of lymphoproliferative disease presents with thoracic pain 2 days ago. Echocardiography shows an important pericardial effusion (A) - (red arrow) and a nodular lesion in visceral pericardium (B) - (gray arrow), suspicious for secondary involvement.

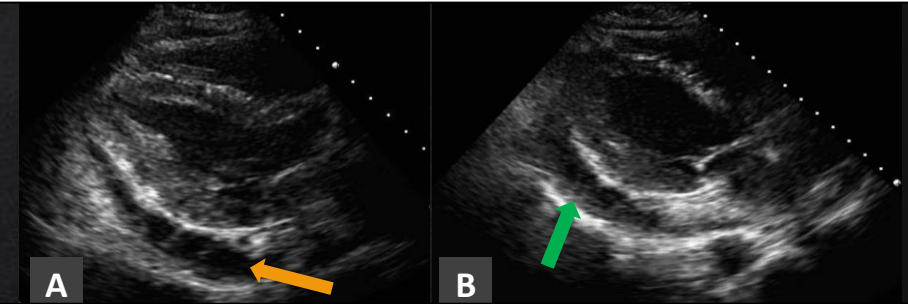


Fig 6: 55-year-old men presents with moderate pericardial effusion (A) - (orange arrow) with echogenic focus (fibrin) (B) - (green arrow), suspicious for constrictive pericarditis.

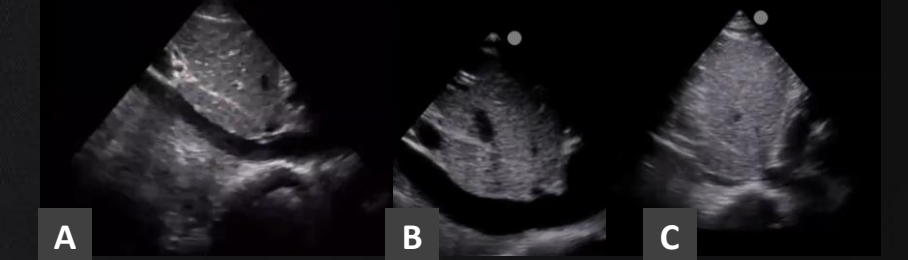


Fig 7: inferior vena cava normal (A); congested (B) and collapsed (C).

US APPLICATIONS IN ACUTE CARE - ABDOMEN

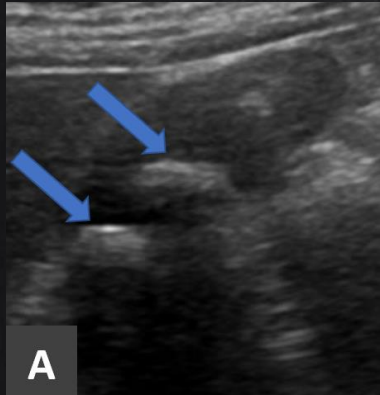


Fig 1: 70-year-old woman presents with cholelithiasis (A) (blue arrows) with posterior acoustic shadowing.

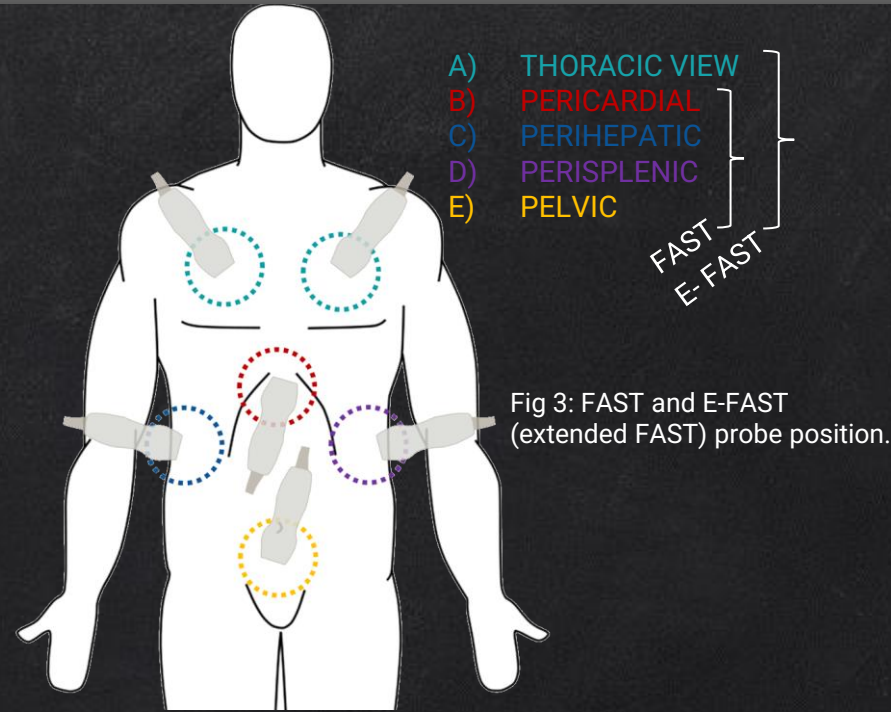


Fig 3: FAST and E-FAST (extended FAST) probe position.

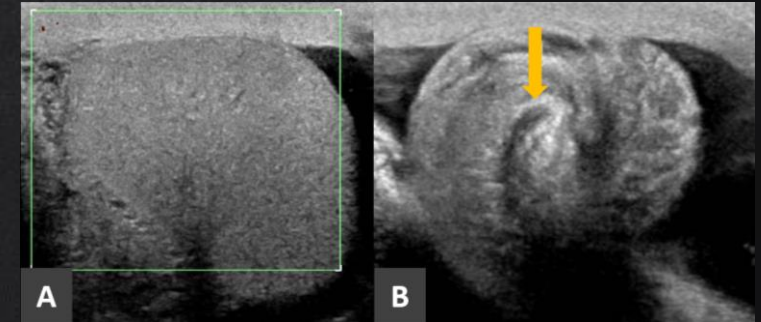


Fig 5: 25-year-old man with right testicular torsion evidenced by absence of Doppler flow (A) and twisted spermatic cord showing concentric pattern on the grayscale (B) - (yellow arrow).

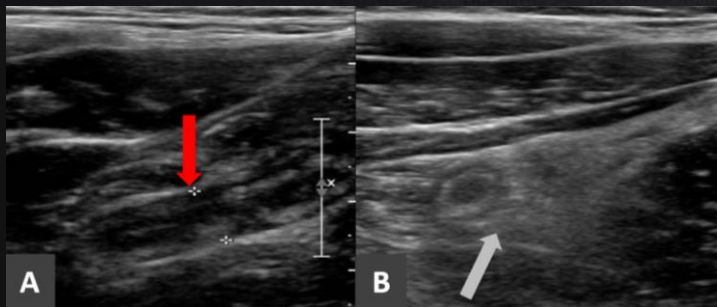


Fig 2: 26-year-old man with the appendix in the upper limit of normality (A) showing partially compressibility (A) - (red arrow) and heterogeneity of the periappendicular fat (B) - (gray arrow), compatible with acute appendicitis.

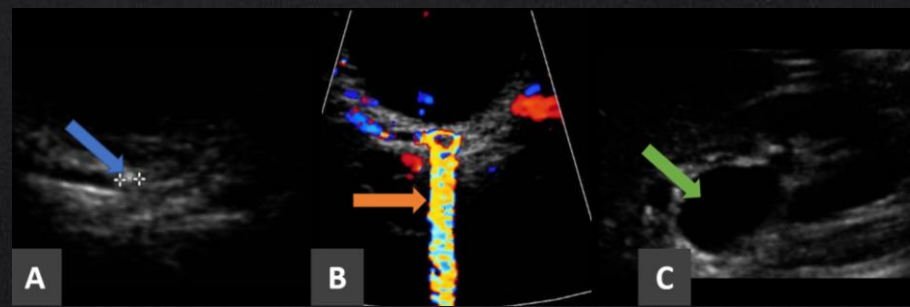


Fig 4: 21-year-old woman presents with right distal ureterolithiasis (A) - (blue arrow) with the color comet tail artifact (B) - (orange arrow), causing dilatation of collector system upstream (C) - (green arrow).

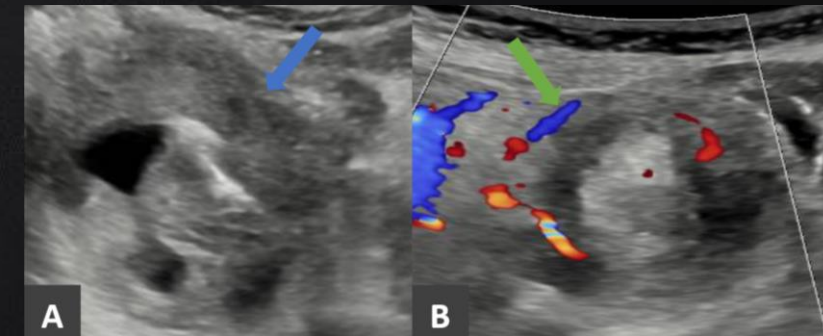


Fig 6: 3-year-old girl with abdominal pain 3 days ago presents with ileocolic intussusception in the right iliac fossa. The left image evidences the pseudokidney sign (A) - (blue arrow) and in the right image there is preserved vascularization in the bowel loops involved (B) - (green arrow).

US APPLICATIONS IN ACUTE CARE - VESSELS

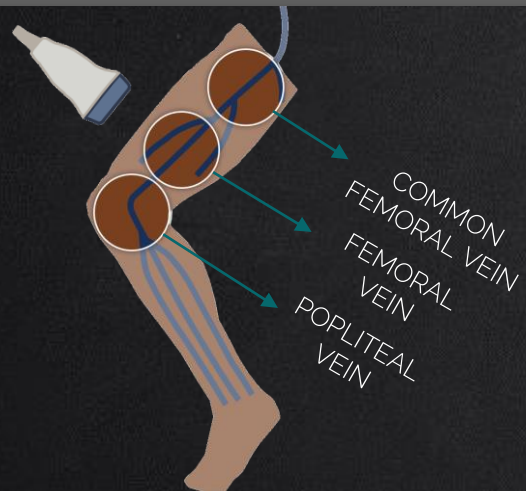


Fig 1: "Frog leg" position and 3-point POCUS technique.

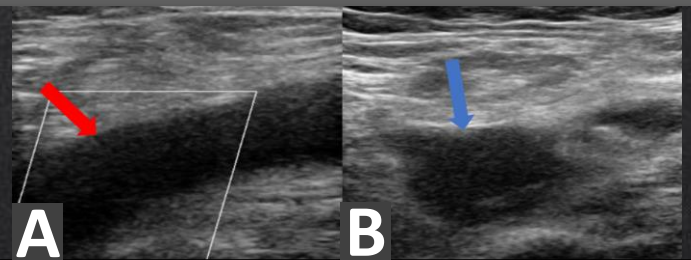


Fig 3: 86-year-old woman presents with asymmetric edema of left leg. Left image shows absence of Doppler flow (A) - (red arrow) in the left common femoral vein. Right image demonstrate absence of compressibility (B) - (blue arrow) in this vein, compatible with acute thrombosis.

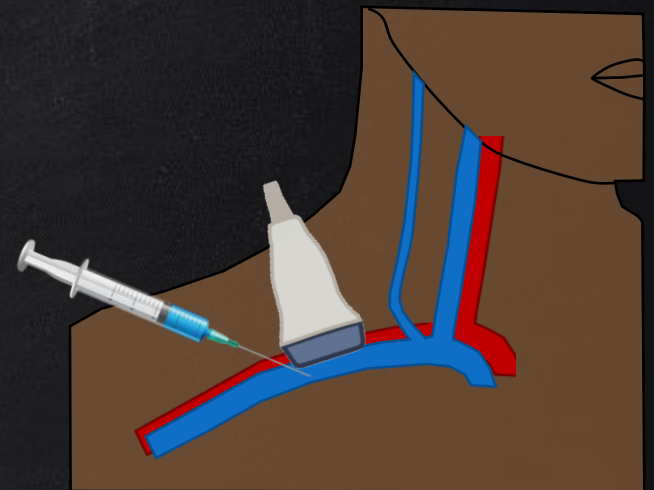


Fig 6: Ultrasound-guided peripherally inserted central catheter (PICC).

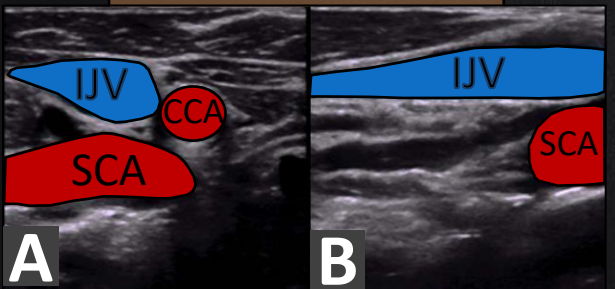
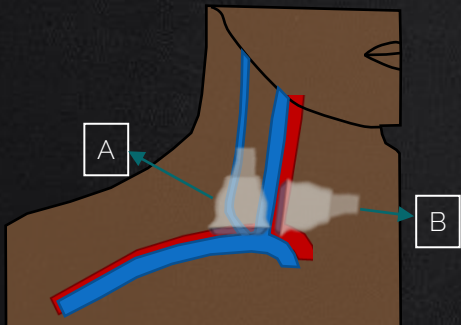


Fig 2: internal jugular ultrasound. IJV = internal jugular vein; SCA = subclavian artery; CCA = common carotid artery.



Fig 4: 78-year-old woman presents with partial thrombosis of the right internal jugular vein (A) - (orange arrow), which shows absence of compressibility.

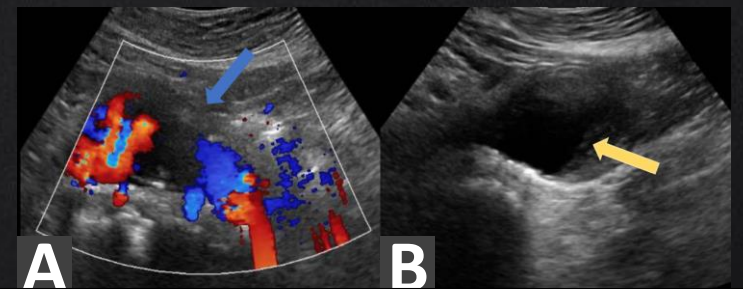


Fig 5: 74-year-old woman with fusiform infrarenal abdominal aortic aneurysm (A) - (blue arrow) presenting circumferential mural thrombosis (B) - (yellow arrow).

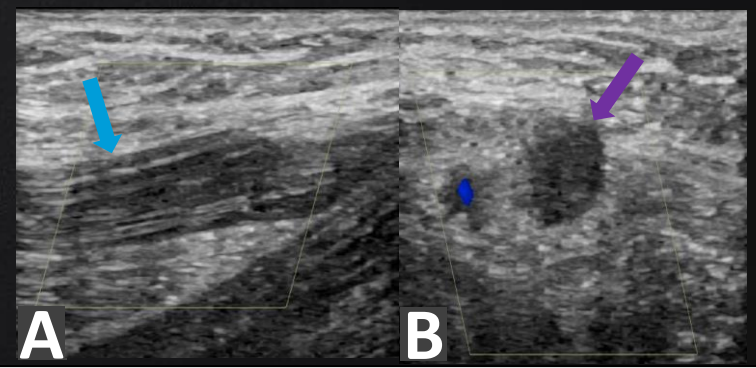


Fig 7: 90-year-old woman presents with asymmetric edema on right arm 3 days after insertion of peripherally inserted central catheter (PICC). Left image shows absence of Doppler flow (A) - (blue arrow) pericatheter in the right basilic vein. Right image demonstrate absence of compressibility (B) - (purple arrow) in this vein, compatible with acute thrombosis.