GE HealthCare

Versatility, portability and image quality:

The role of Versana Active in vascular care

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Clinical case of deep vein thrombosis

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The following case was obtained by Zayed Meadows, B.S., RVT using a Versana Active.™

Zayed Meadows, B.S., RVT is a paid consultant for GE HealthCare and was compensated for participation in this case study. The statements by Zayed Meadows, B.S., RVT described here are based on her own opinions and on results that were achieved in her unique setting. Since there is no "typical" hospital and many variables exist, i.e. hospital size, case mix, etc., there can be no guarantee that other customers will achieve the same results.

Deep vein thrombosis

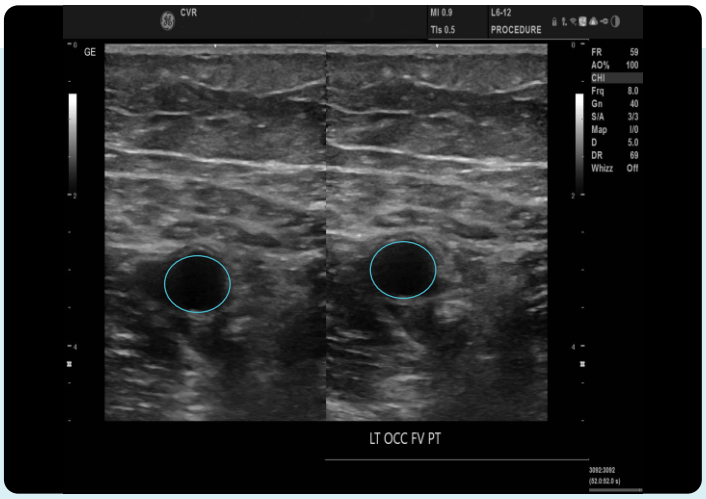
Physical presentation

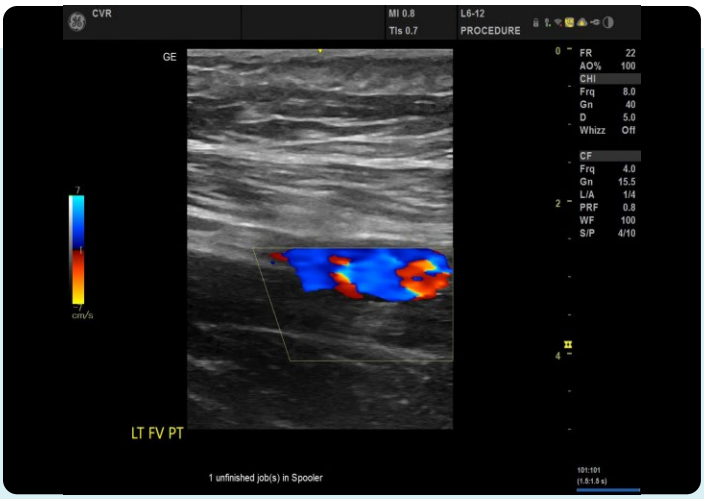
- Patient presented with pruritus and superficial thrombophlebitis in the lower extremity along with associated symptoms of fatigue, leg cramping and tightness.
- Body Mass Index: 31.28 Kg/m^2 with a right thigh circumference of 59 cm and 61 cm on the left.
- Patient has a history of deep vein thrombosis (DVT) and pulmonary embolism (PE) in 2018.

Indication to consider ultrasound: Due to history of DVT with associated PE and associated symptoms, a vascular ultrasound of the lower extremity veins was indicated.

Deep vein thrombosis (DVT) is a condition in which a blood clot develops in the deep veins, usually in the lower extremities.

A ***pulmonary embolism*** (PE) occurs when a part of the DVT clot breaks off and travels to the lungs, which can be life-threatening. Venous thromboembolism (VTE) refers to DVT, PE, or both.[1]





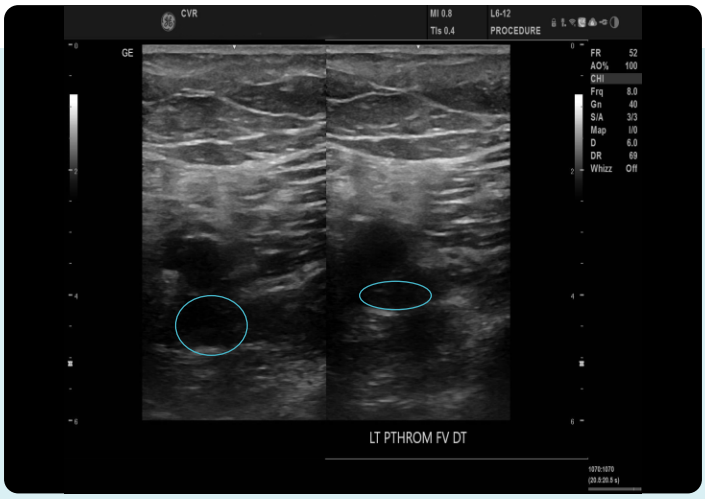
Femoral vein images

Transverse view of the left proximal femoral vein with lack of B-mode compressibility

Longitudinal view of the left proximal femoral vein with absence of color flow and spectral Doppler signal present.

Deep vein thrombosis *cont.*

Clinical presentation



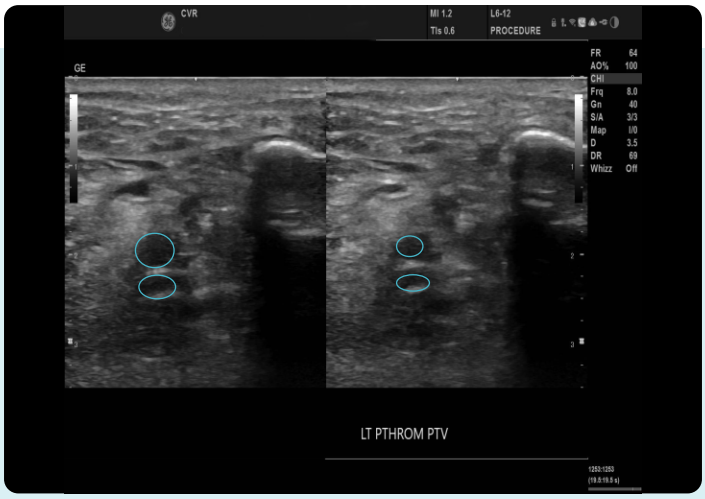
Femoral vein images

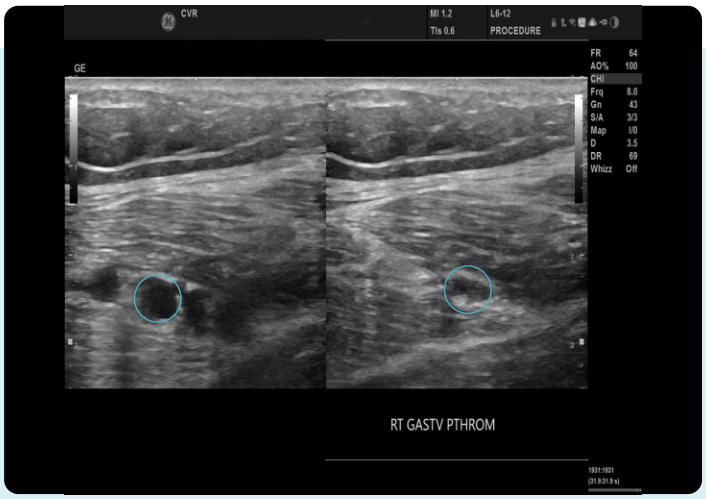
Transverse view of the left distal femoral vein with partial compression.

Longitudinal view of the left distal femoral vein shows no color flow or spectral Doppler signal present.

Deep vein thrombosis *cont.*

Clinical presentation *cont.*





Calf vein images

Transverse views of the left posterior tibial veins with partial compression.

Transverse views of the right gastrocnemius vein with partial compression.

How and Why of DVT

- **Anatomy of a vein**: The walls of veins and arteries have the same three layers. However, there is less smooth muscle and connective tissue in the walls of veins because blood in the veins has less pressure than in the arteries.
- **Compressibility**: Veins are typically highly compressible and should collapse with minimal external probe pressure. When a DVT is present, the blood clot makes the vein unable to compress. A non-compressible vein is the more accurate signal of DVT and almost always indicates a DVT is present.
- **Color Doppler**: Acute DVT appears hypoechoic with intraluminal defect or complete color void.
- **Spectral Doppler**: Shows no venous signal or loss of phasicity.

Deep vein thrombosis *cont.*

Key findings

- Ultrasound exam showed evidence of DVT in bilateral lower extremities.
- It also showed superficial venous insufficiency in both lower extremities.
- There were no key features that were used to enhance the image quality.
- Following anticoagulants, patient was rescanned and thrombosis resolved.

Conclusion

This example shows the portable Versana Active ultrasound system provides versatility while maintaining image quality comparable to that of a traditional ultrasound console.

With the use of Versana Active, we were able to achieve optimal image quality in a technically difficult patient, without time-consuming image manipulation. It has the sensitivity to demonstrate both color and spectral Doppler of deeper vessels without image degradation or delays in the frame rate with triplex mode.

Deep venous thrombis imaging with Versana Active allowed for superior imaging of thrombois within the deep and superficial venous system.

The portable Versana Active ultrasound system does not pose limitation with deep vein imaging vascular exams.

Zayed Meadows B.S., RVT

Registered Vascular Technologist

Zayed is the director of The Vascular Lab at the Center for Vein Restoration (CVR) where she oversees a team of sonographers who assist physicians in the diagnosis and treatment of venous disease through the use of ultrasound. Before moving to CVR in 2007, she worked as Vascular Technologist from 2000 to 2007. Zayed is a graduate of the University of Tennessee at Chattanooga (USA) with a B.S. in Exercise Science, Cardiopulmonary Rehab. She is trained in various modalities of vascular ultrasound, which consist of arterial, transcranial doppler, carotid, venous, and visceral studies.

1. https://wwwnc.cdc.gov/travel/yellowbook/2024/air-land-sea/deep-vein-thrombosis-and-pulmonary-embolism#:~:text=Deep%20vein%20thrombosis%20(DVT)%20is,DVT%2C%20PE%2C%20or%20both

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