

## Runoff CE-MR Venogram

There are many methods available to visualize and image veins using MRI, including contrast-enhanced (CE) and non contrast enhanced (NCE) techniques. These can be employed effectively with little or no modification from existing protocols. MR venography is a highly accurate, easy and successful technique in most of the situations compared to other imaging techniques. CE-MR venography is a widely used technique that uses a 3-dimensional spoiled gradient echo sequence in conjunction with a bolus of gadolinium-based contrast. Reformatting and sub-volume maximum intensity projection images adequately demonstrate venous anatomy and pathology. The availability of non contrast methods with MR venography, make it a preferred technique in patients with renal insufficiency or contrast allergy. MR venography is a valuable technique for assessing veins in regions poorly accessible for imaging using sonography. Both CE and NCE methods are easily available and can be performed quickly with high accuracy.<sup>1</sup>

Ref: 1. James FG & Christine U. Magnetic Resonance Venography. *Appl Radiol*. 2010;39(6):36-42.

# Runoff CE-MR Venogram: in Detection of Deep Venous Thrombosis

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**“Direct imaging of veins without exposure to ionizing radiation or toxicity of contrast agents”**

### Patient History

A 52-year-old-male, obese and known diabetic on OHAs presented with complaints of swelling and calf pain in both legs (R>L), intermittent claudication associated with dilation of superficial veins. History of immobilisation due to fracture of left tibia 2 months back.

### Physical examination

- Blood pressure of 140/90 mmHg.
- Local examination revealed bilateral lower limb edema, raised temperature, calf tenderness and visible superficial veins.

### Investigation

- D-dimer-positive

### MRI findings

Features of chronic deep venous thrombosis observed in both lower limb veins with total obliteration of the right popliteal vein and marked luminal narrowing of the right external iliac vein and left common iliac vein; superficial varicosities also seen bilaterally.

### Run off CE – MR venogram

#### Procedure

20 ml of contrast was diluted with 180 ml of saline and a bipedal injection was administered at the rate of 1 cc/sec (100 ml per leg). A tourniquet was applied on the ankle to help contrast flow into the deep veins.

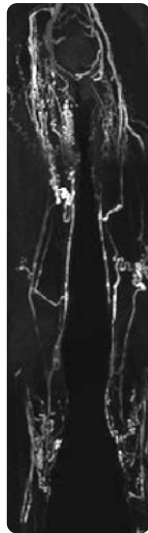
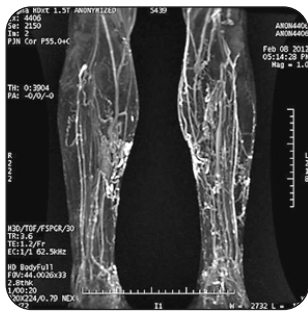


## Acquisitions Parameters

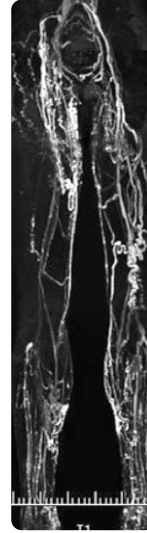
3D TOF FSPGR

FOV-36 ST-2.8 Freq-320

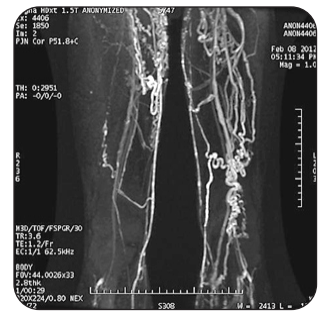
Phase-192 NEX-1 BW-62.5



With tourniquet



Without tourniquet



Images Courtesy of Medall Precision Diagnostics Adyar, Tamil Nadu

## Advantages

- Direct imaging of pelvic veins and inferior vena cava.
- Highly sensitive and specific. No toxicity problems from contrast agent.
- No exposure to ionizing radiation.
- Clinicians get the complete picture in the same view.

## Treatment

Anticoagulation was achieved with low molecular weight heparin on day 3 of hospitalization. Patient was discharged with 5 mg of warfarin everyday, with instructions to continue the use of compression stockings.

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