

# Case study: Comparison of Reflux Testing Methods

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# DISCLOSURE

## Mariah Elliot

- No relevant financial relationship reported

# Sonographer's Complaints:

- Long, tedious exams
- Ergonomic nightmare
- Patient unable to hold still
- Variable anatomy

# Methods of Testing for Reflux:

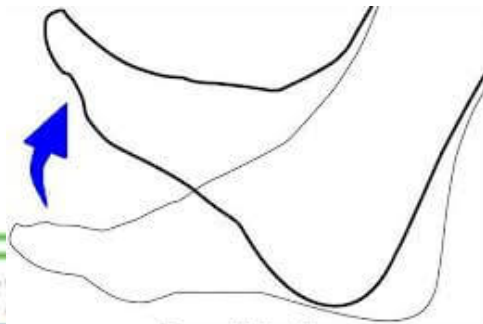
- Valsalva



- Manual Compression



- Dorsiflexion



*Dorsiflexion*

- Pneumatic Cuff Compression



# Do you rule out obstruction?

- Yes!
- Complete venous evaluation performed with the patient supine

# Case Study

- 14 year old female
- Complains of bilateral lower extremity itching and pain for 1 year
- Symptoms present after 5 minutes of standing still and are relieved within 5 minutes of lying down
- No visible varicose veins, no family history of varicose veins

# Results of Outside Examination:

## STANDING VENOUS REFLUX STUDY

Age: 13 yrs

Reason For Study: Painful lower extremities with prolonged standing and swelling

A standing or reverse Trendelenburg (>15 degrees) venous Duplex examination was performed to evaluate valvular competency in the deep and superficial veins in the lower extremities. Venous reflux is identified by at least one full second of reversed flow by Doppler in the deep veins or at least 0.5 seconds in the superficial veins after distal thigh or calf compressions.

### Right Leg

REFLUX right common femoral vein above the saphenofemoral junction.

REFLUX right femoral vein in the mid thigh.

Competent right popliteal vein.

REFLUX right proximal great saphenous vein.

REFLUX right great saphenous vein mid thigh.

REFLUX right great saphenous vein distal thigh.

REFLUX right great saphenous vein proximal calf.

REFLUX right great saphenous vein mid calf.

REFLUX right great saphenous vein distal calf.

### Left Leg

Competent left common femoral vein above the saphenofemoral junction.

REFLUX left femoral vein in the mid thigh.

Competent left popliteal vein.

Competent left proximal great saphenous vein.

Competent left great saphenous vein mid thigh.

Competent left great saphenous vein distal thigh.

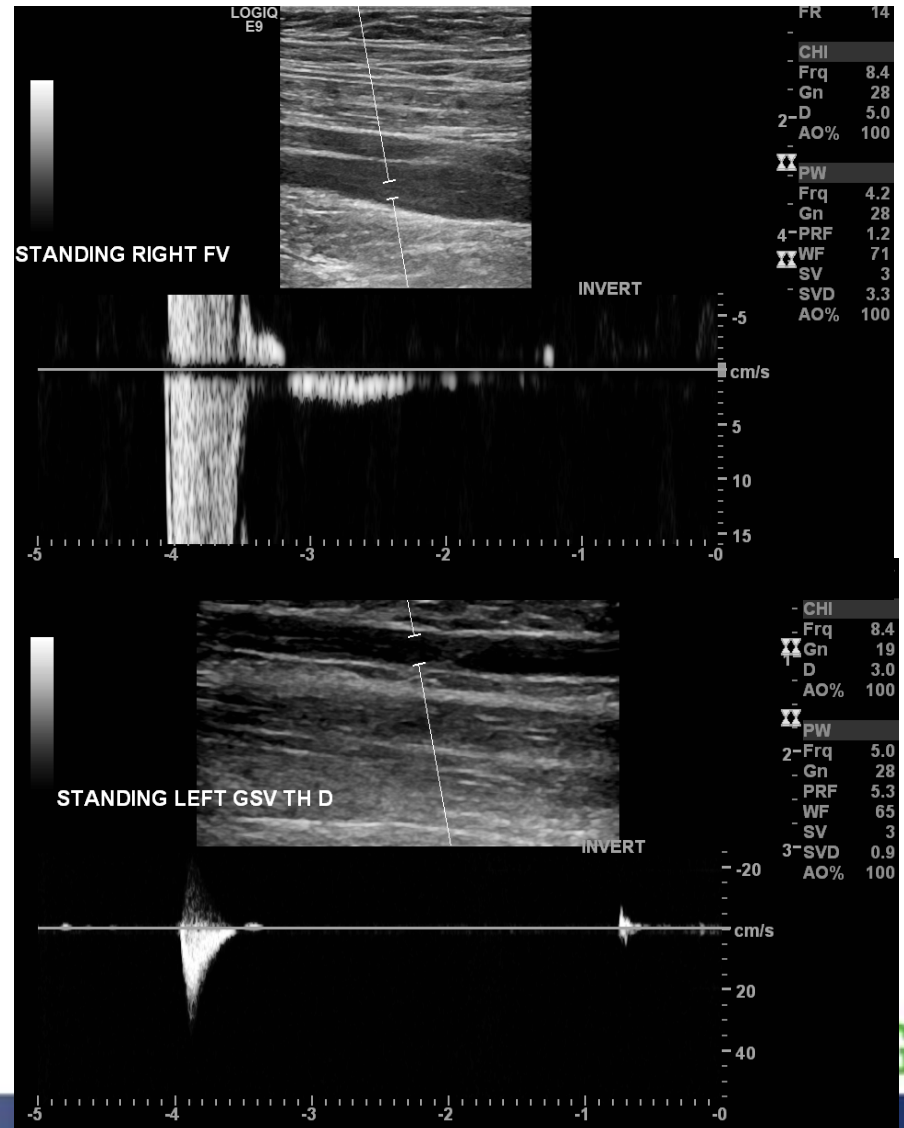
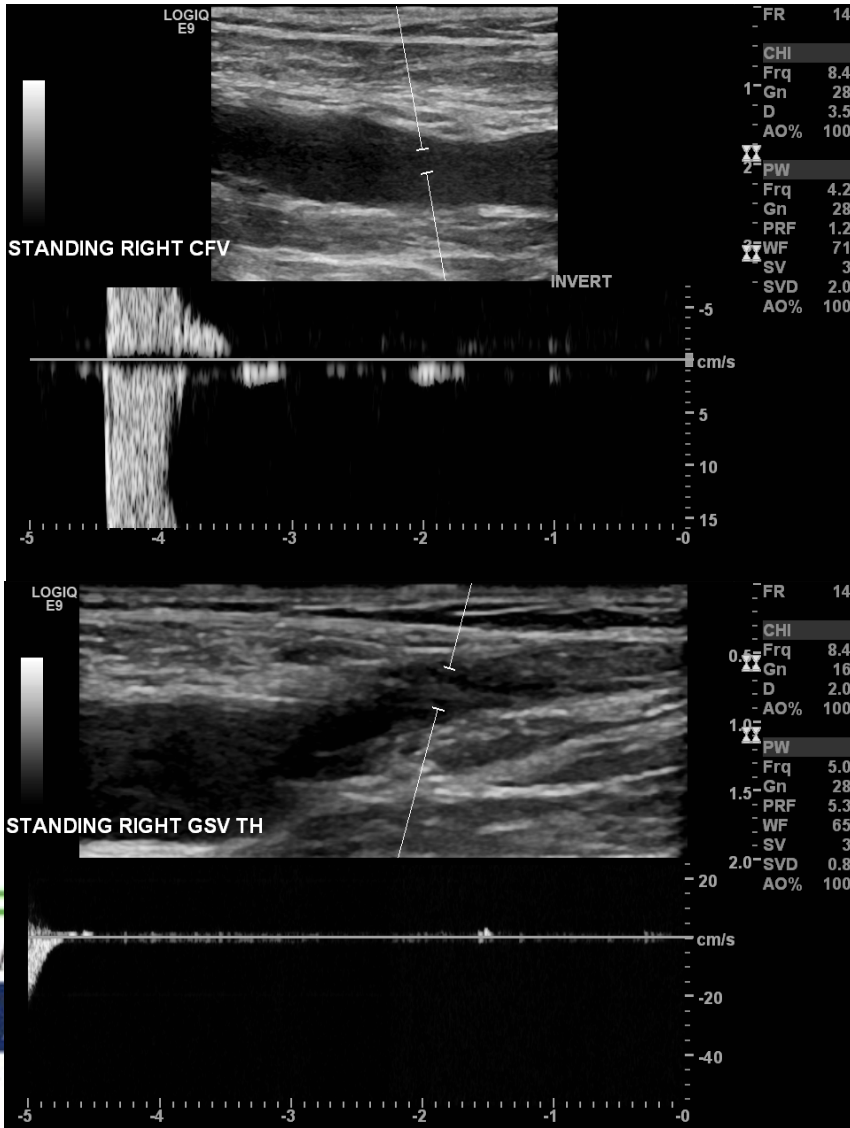
Competent left great saphenous vein proximal calf.

REFLUX left great saphenous vein mid calf.

REFLUX left great saphenous vein distal calf.

# Came for a 2<sup>nd</sup> Opinion

- Standing Evaluation





# Question?

- Why was our standing evaluation was normal?

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# Conclusion:

- Patient said that previous examination was performed completely supine
- Unfortunately the patient lived 3 hours away from the hospital, had to have her parents take time off work and pay for unnecessary repetitive tests due to the examination not being done accurately in the first place.

# Take Home Message:

- Always question a study that doesn't match up with clinical signs and symptoms
- The ultrasound examination can make a difference for patient treatment and clinical course
- Stand up your patient to accurately determine valvar competence!

# IAC Standards and Guidelines 2018

## STANDARD – Techniques

4.4B Appropriate techniques must be used for the evaluation of the peripheral venous deep and superficial systems, stents, hemodialysis access arteriovenous fistulae (AVF)/dialysis access grafts to assess for the presence of any abnormalities and to document their severity, location, extent and whenever possible etiology.

4.4.1B Elements of proper technique include, but are not limited to:

4.4.1.1B performance of an examination according to the facility specific, written protocol;

4.4.1.2B proper patient positioning:

i. When the primary assessment is for valvular function, the limb must be placed in a dependent position. Standing is the preferred position if not constrained by the patient's physical condition. Sitting or reverse Trendelenburg may be used if the patient cannot stand. Patient position must be noted in the final report.

4.4.1.3B patient preparation;

4.4.1.4B appropriate equipment and transducer selection;



*Thank You!!*