



7<sup>th</sup> ANNUAL  
**Venous Symposium**  
New York

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## Clinical Case

# Leg Ulcer With Multiple Sources Of Reflux

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A 50 year old male with long-standing bilateral chronic venous insufficiency presented with right leg ulceration.

## Symptoms

Aching and heavy lower limbs

Symptoms get worse with prolonged standing

He feels better with lower limb elevation and compression stocking therapy

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# History

## Medical and Surgical history:

Chronic venous insufficiency with bilateral GSV endovenous ablation 4 years ago

Recurrent right lower calf medial ulcer

Asthma, appendectomy, laminectomy

No history of VTE

**Social history:** non-smoker

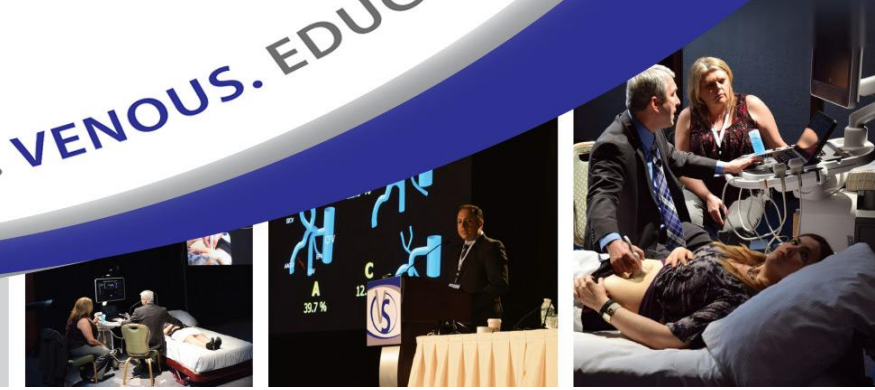
**Family history:** diabetes mellitus, heart disease

**Allergies:** NKDA

**Current medications:** mobic

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# Physical exam

Both lower limbs were warm and well perfused

Palpable distal pulses

Motor and sensory were intact

**Prominent varicosities**

Right lateral thigh and calf

Left medial thigh and calf

**Ulcer** on right leg just proximal to medial malleolus.

Approximately 1cm x 1.5cm in size, superficial,  
with minimal granulation.

No erythema

**Hyperpigmentation** of the calf in both limbs

Bilateral **edema**

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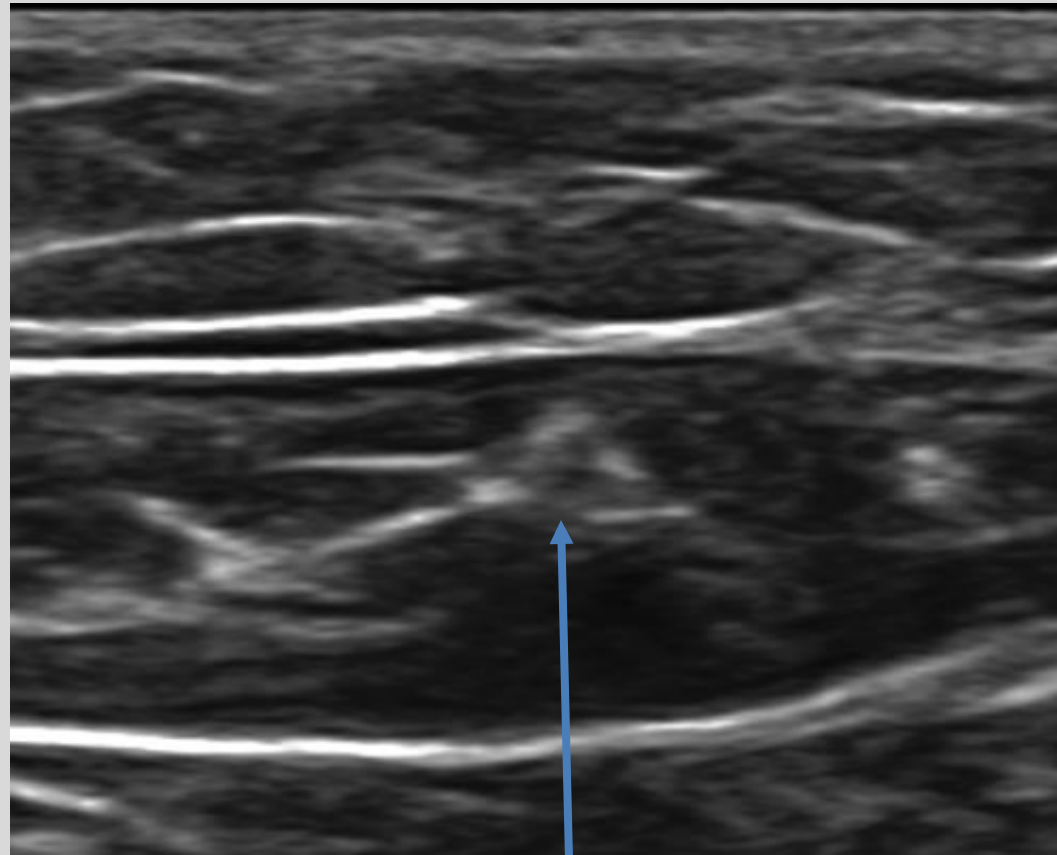
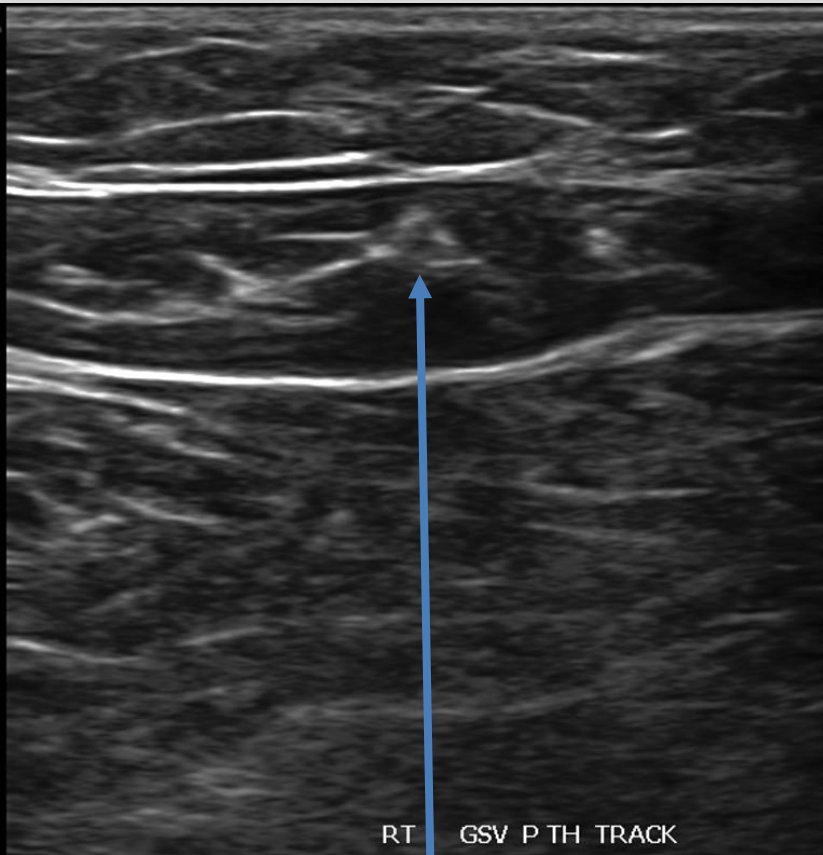
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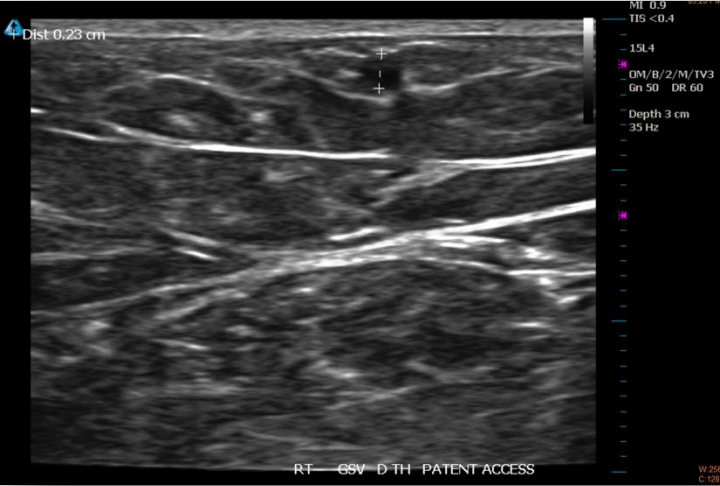


# RT thigh GSV 4 years post ablation



Cross-sectional view of the GSV. The vein is fibrosed with markedly reduced diameter.

Magnified view

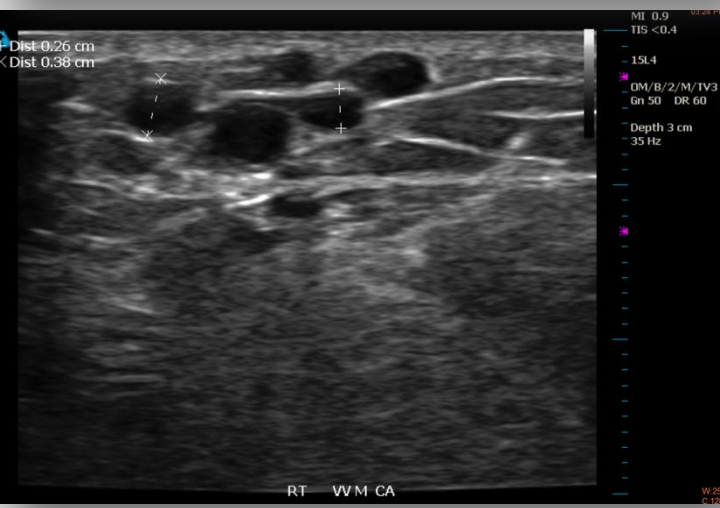


Accessory saphenous vein

**ASV reconnected with GSV in the upper calf**



GSV in the upper calf



GSV at mid-calf with varicose tributaries

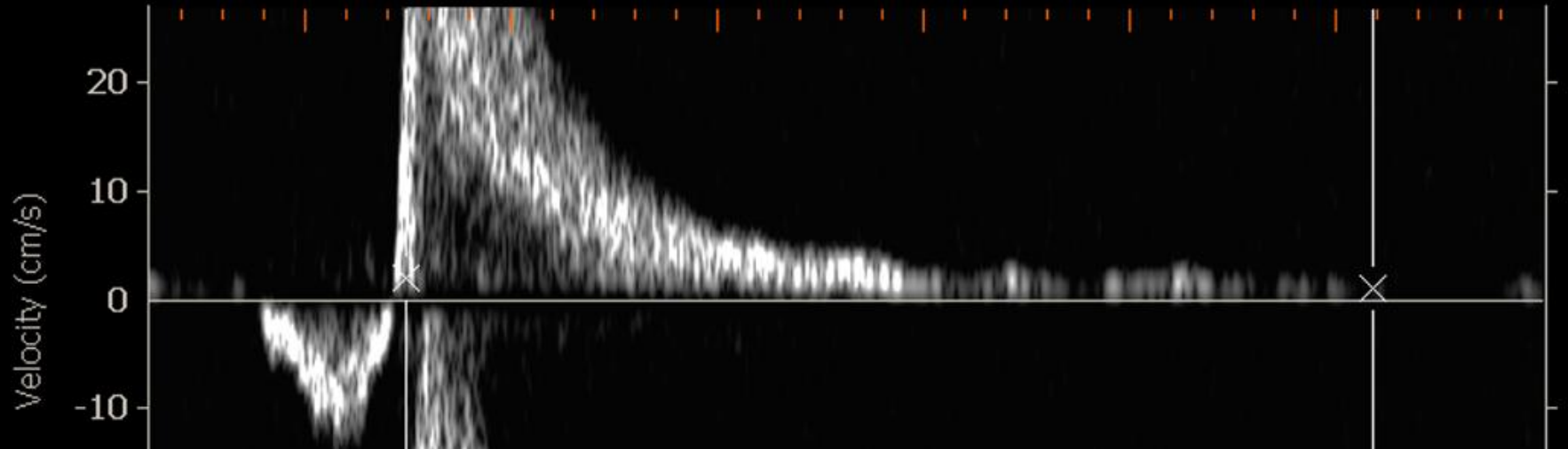
**Reflux was found in all veins demonstrated in these images**

× Time 4.69 s



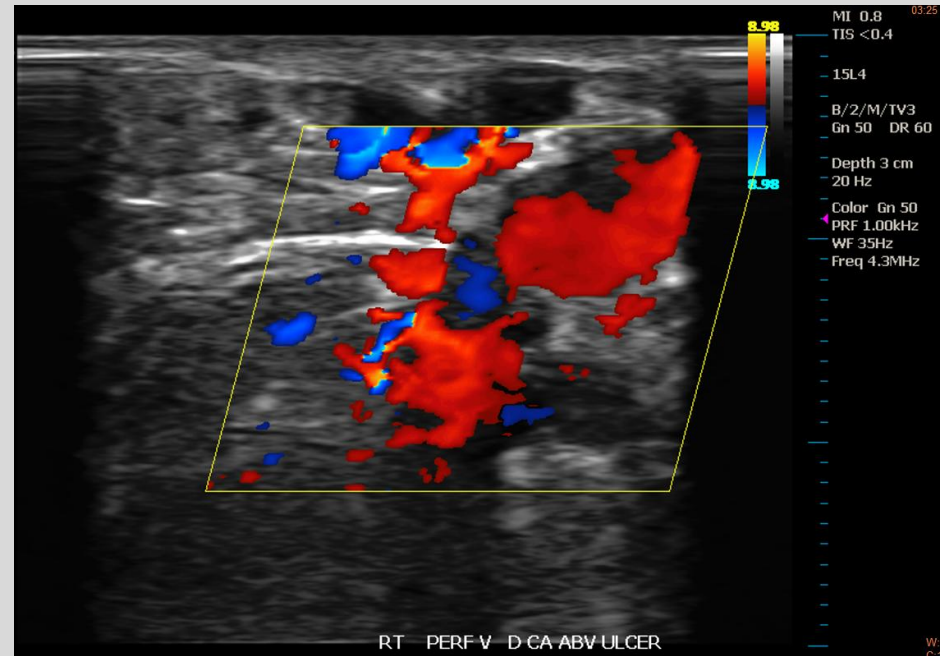
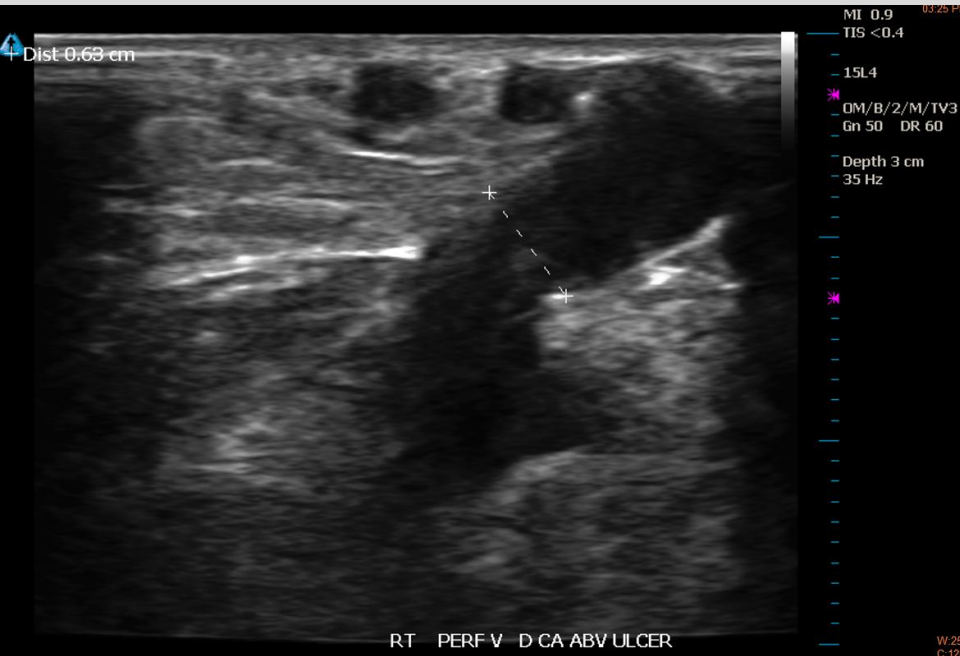
13.48

13.48



**High velocity long duration reflex in the GSV**

# Imaging in the ulcer area



A calf perforator just above the ulcer measured **6.3mm** and had reflux. It was connected to a cluster of varicosities in the ulcer area.



**Supine position**

The patient has **multiple ulcer recurrences** treated with Unna boot. After the GSV ablation 4 years ago no other intervention has been performed.

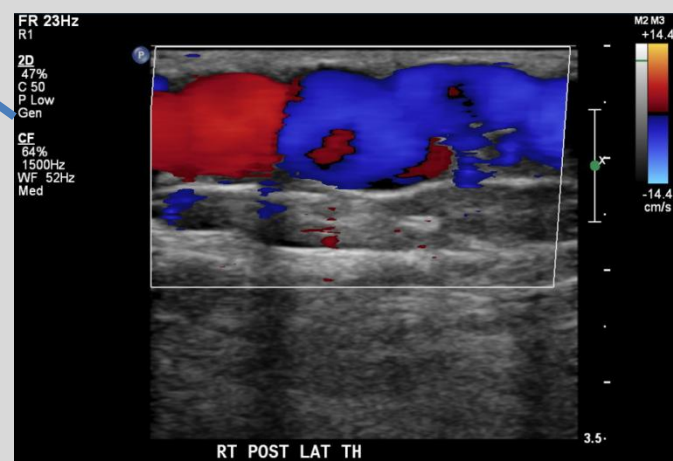
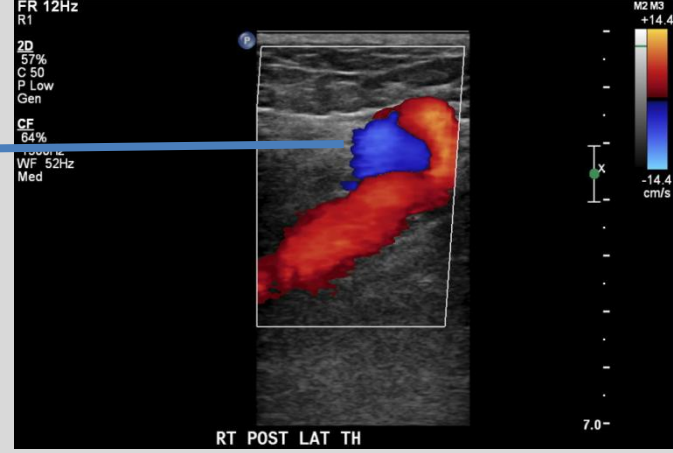
Perforator vein

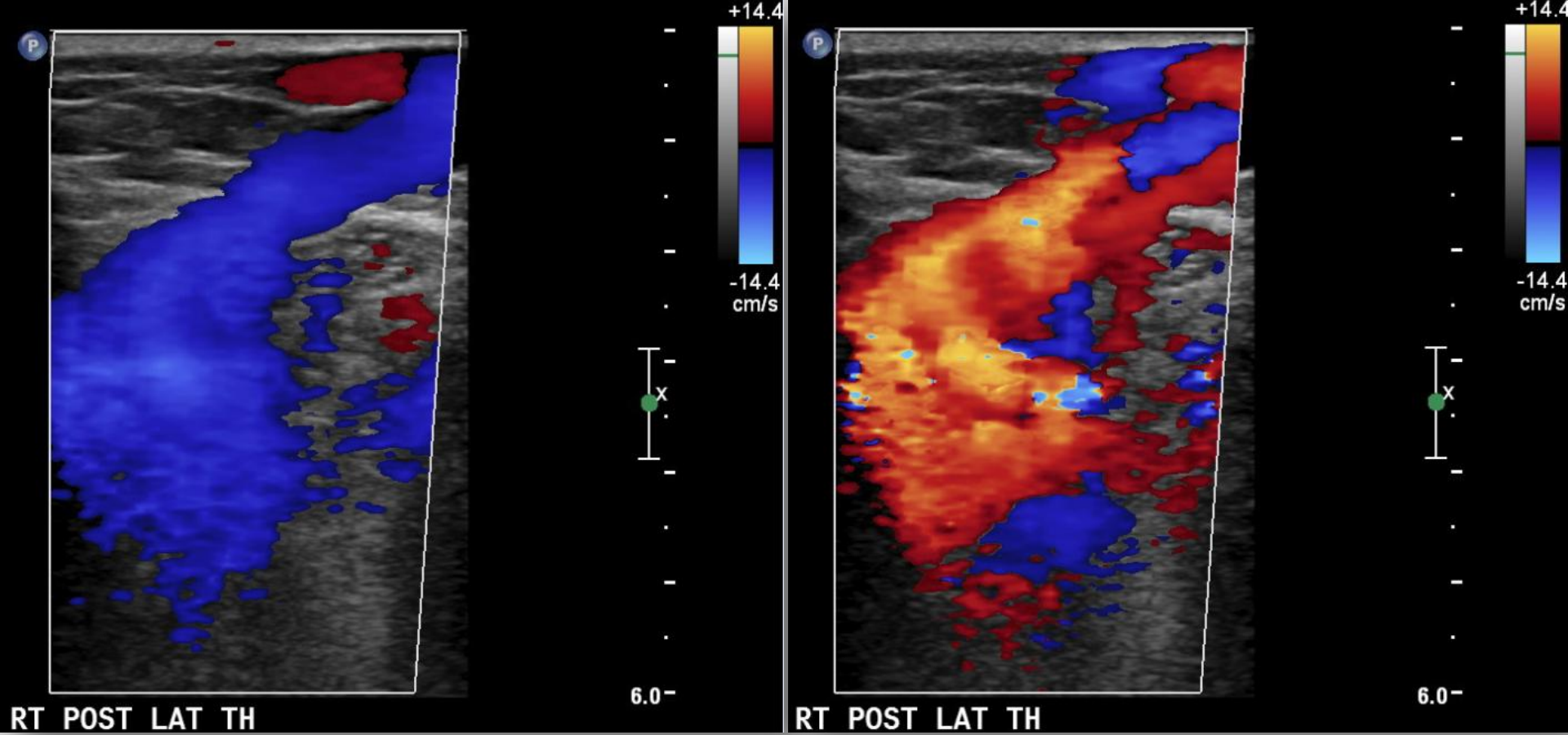


Varicosities

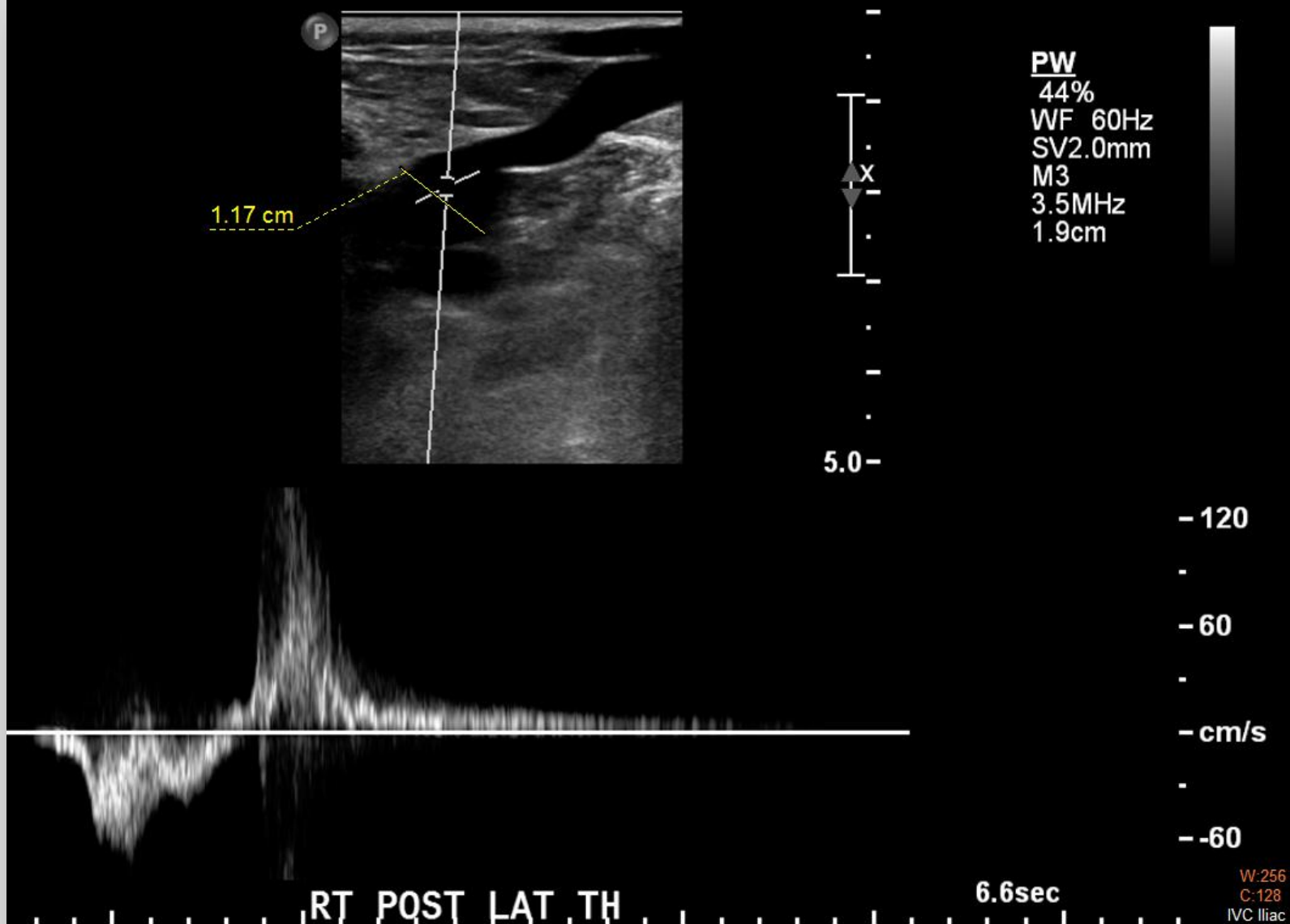


Standing position

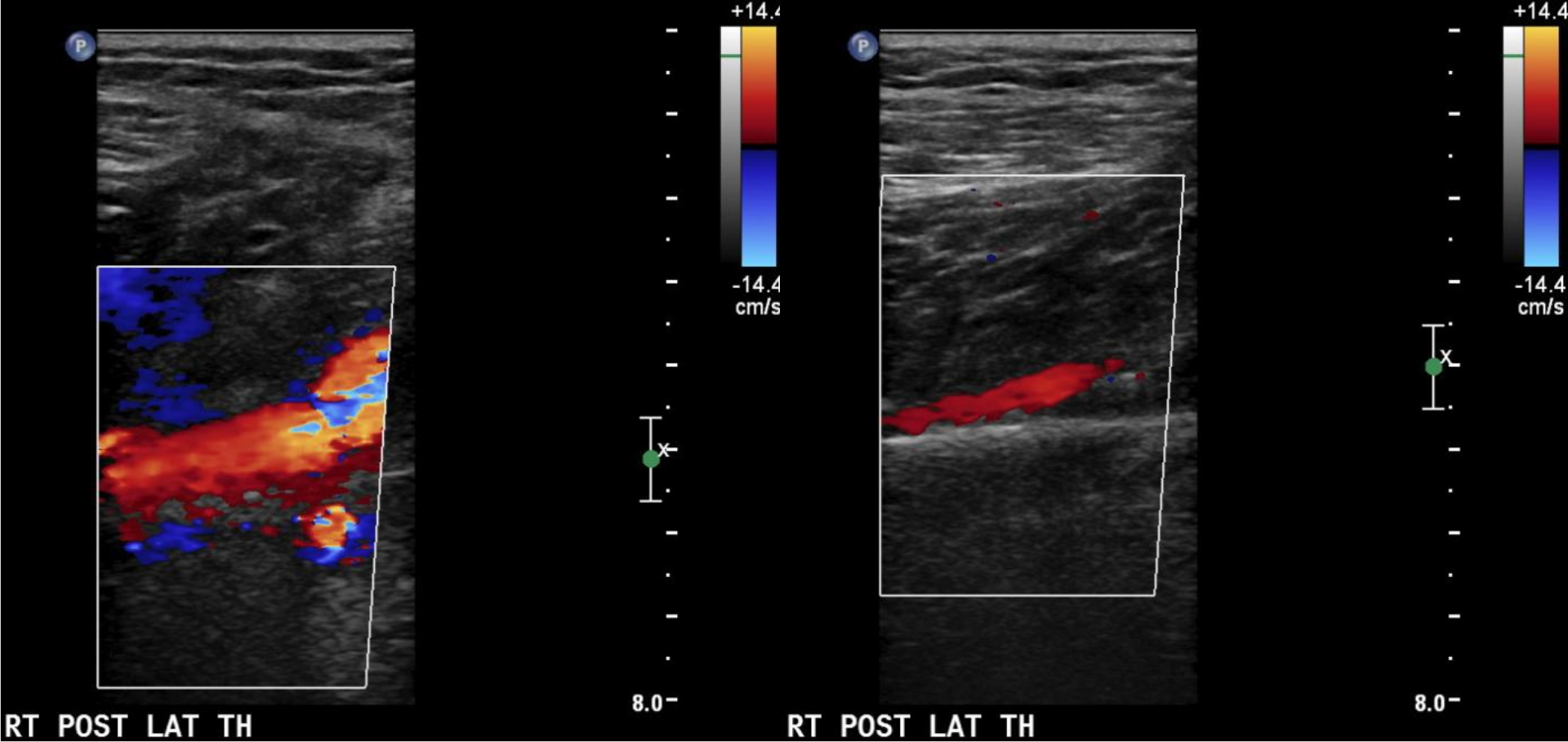




Postero-lateral thigh perforator vein with antegrade flow during calf compression and reflux after the release.

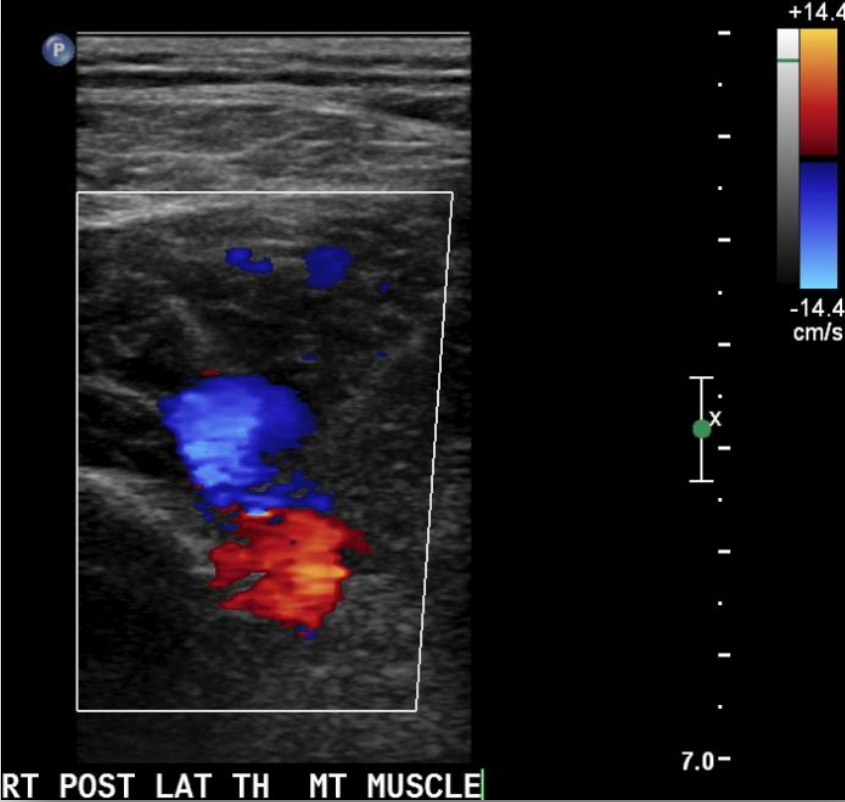


Postero-lateral thigh perforator vein measured **11.7mm**.  
It has very high velocity and long duration reflux.

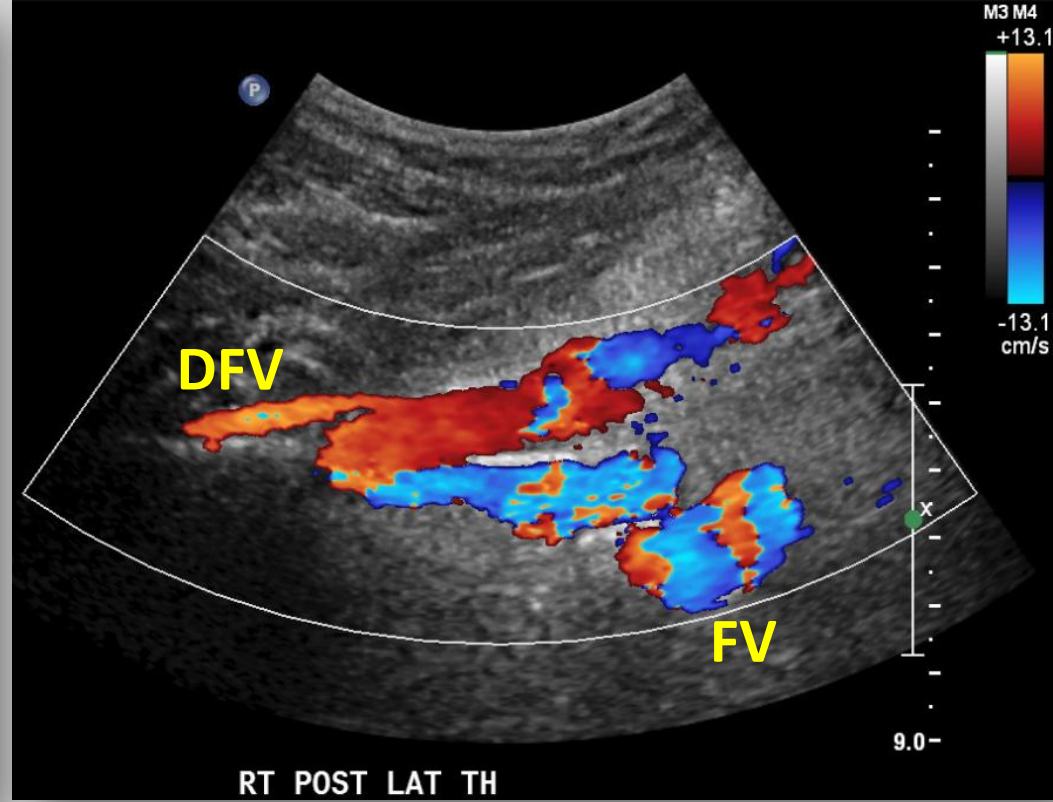


Postero-lateral thigh perforator vein has a long course. It is the longest perforator vein in the lower extremity.

The picture on the left is at 5cm below the deep fascia while the picture on the right is over 10cm away from perforator vein entry. It shows the terminal connection with a tributary of the deep femoral vein just above the femur.



Postero-lateral thigh perforator vein (red) connects with tributaries (blue) in the adductor magnus muscle.



Postero-lateral thigh perforator vein connects with the femoral vein (FV) and a tributary of the deep femoral vein (DFV).

Labropoulos N, et al. Prevalence and clinical significance posterolateral thigh perforator vein incompetence. J Vasc Surg 1997;26:743-8.

**Prevalence 0.92%**

**26 PLTP in 24 limbs of 21 patients among 2820 limbs over 6 years**

### Patient demographic data and CEAP Class

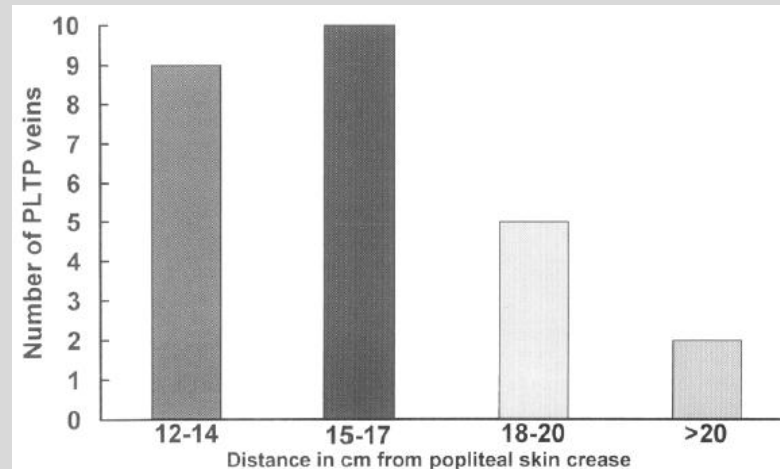
<i>CVD class</i>	<i>No. of patients</i>	<i>Sex (M/F)</i>	<i>No. of limbs</i>	<i>Mean age ± SD (yr)</i>	<i>Age range (yr)</i>
0					
1					
2	8	3/5	10	35 ± 14	22 to 65
3	6	2/4	7	38 ± 12	25 to 57
4	5	2/3	5	46 ± 21	31 to 77
5	1	0/1	1	62	
6	1	1/0	1	70	
<b>Total</b>	<b>21</b>	<b>8/13</b>	<b>24</b>	<b>43 ± 16</b>	<b>22 to 77</b>

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Labropoulos N, et al. Prevalence and clinical significance posterolateral thigh perforator vein incompetence. J Vasc Surg 1997;26:743-8.

## Characteristics of the PLTP veins



	<i>Mean ± SD (mm)</i>	<i>Range (mm)</i>	<i>Deep femoral vein</i>	<i>Superficial femoral vein</i>	<i>Muscular veins</i>
Diameter	4 ± 1	2 to 9			
Length	42 ± 11	30 to 80			
Duplication	8				
Two PLTP per limb	2				
Termination*			25†	6	3

Labropoulos N, et al. Prevalence and clinical significance posterolateral thigh perforator vein incompetence. J Vasc Surg 1997;26:743-8.

## Clinical severity in relation to reflux

<i>CVD class</i>	<i>PLTP</i>					<i>Total</i>
	<i>PLTP</i>	<i>PLTP + GSV*</i>	<i>+ LSV</i>	<i>PLTP + GSV + LSV*</i>	<i>PLTP + deep veins</i>	
0						
1						
2	7	2	1			10
3	2	2	1	1	1	7
4		2	1	2		5
5		1				1
6				1		1
Total	9	7	3	4	1	24

**Skin damage** more likely to occur when the saphenous veins are also involved

In patients with skin damage imaging of the iliac veins and IVC is performed for obstruction.

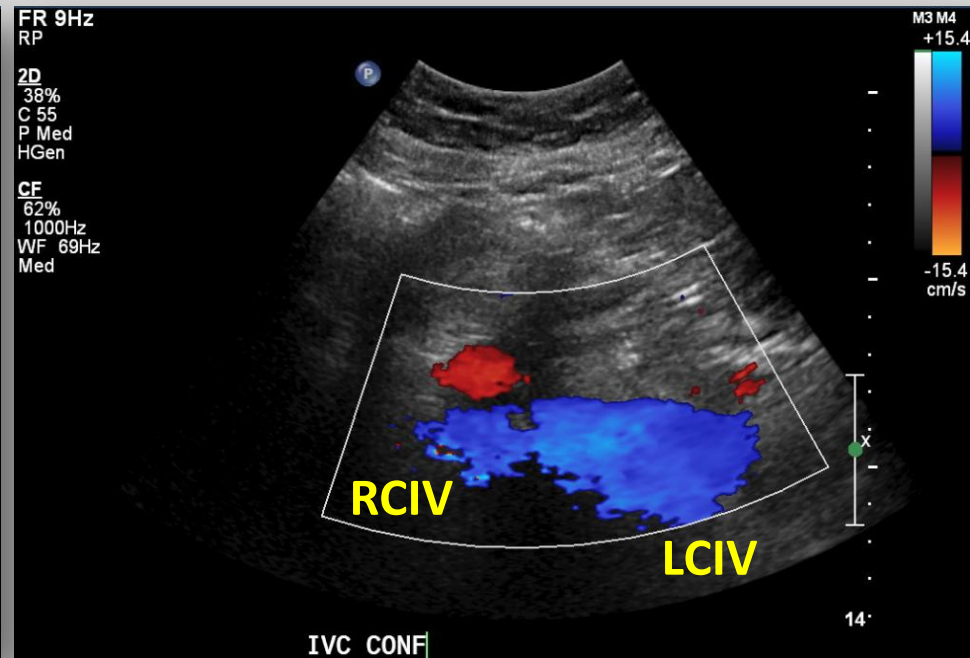
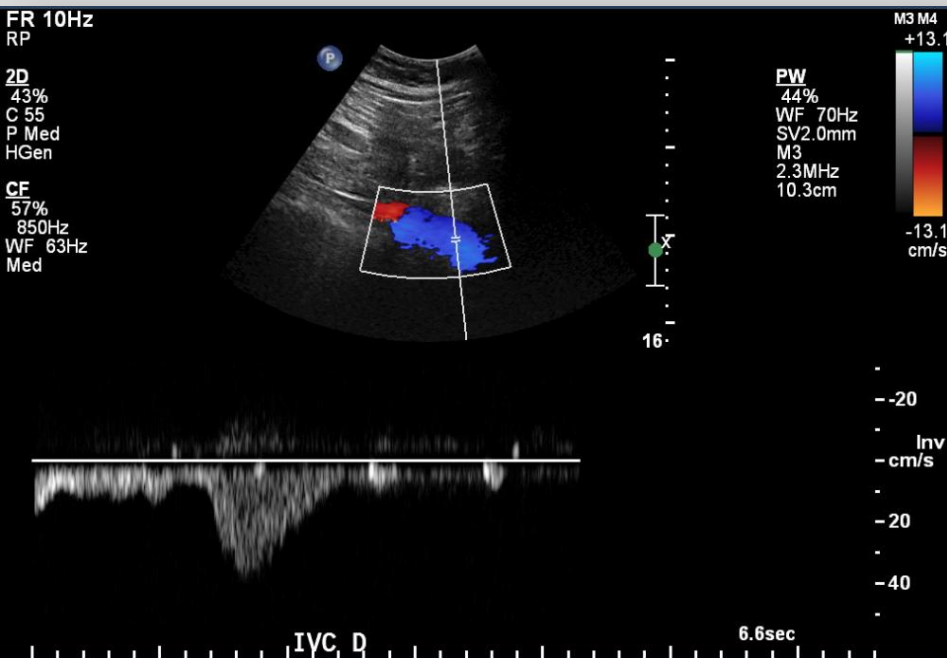
Marston W, Fish D, Unger J, Keagy B. Incidence of and risk factors for ilio caval venous obstruction in patients with active or healed venous leg ulcers. J Vasc Surg 2011;53:1303-8.

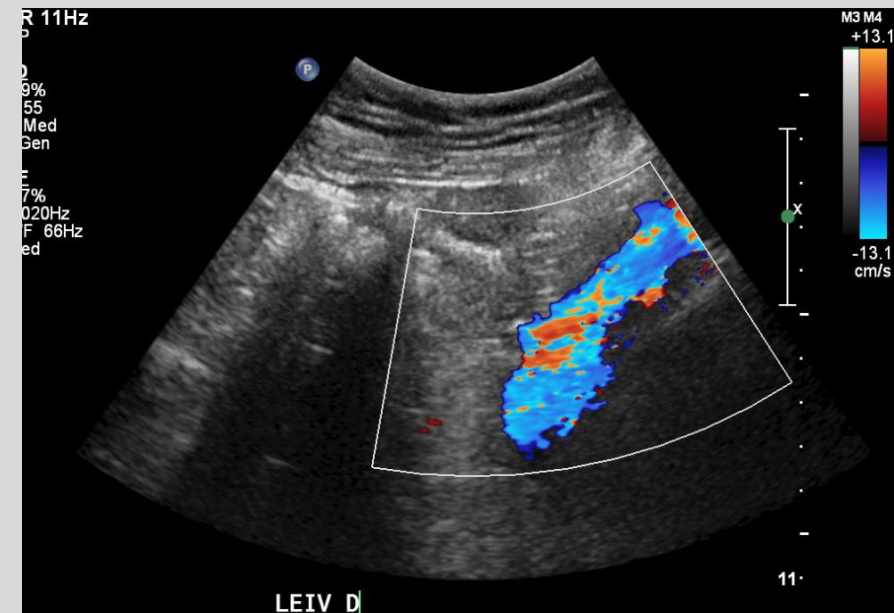
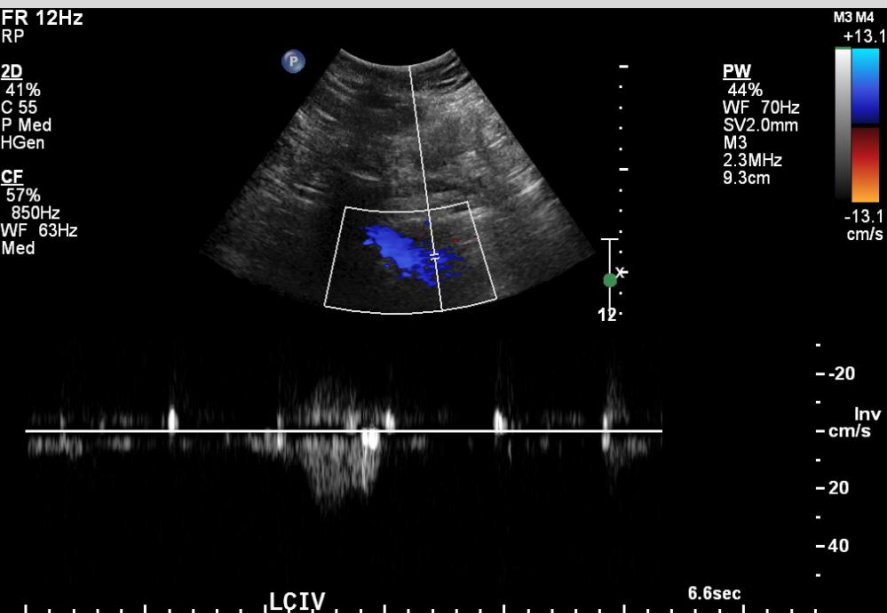
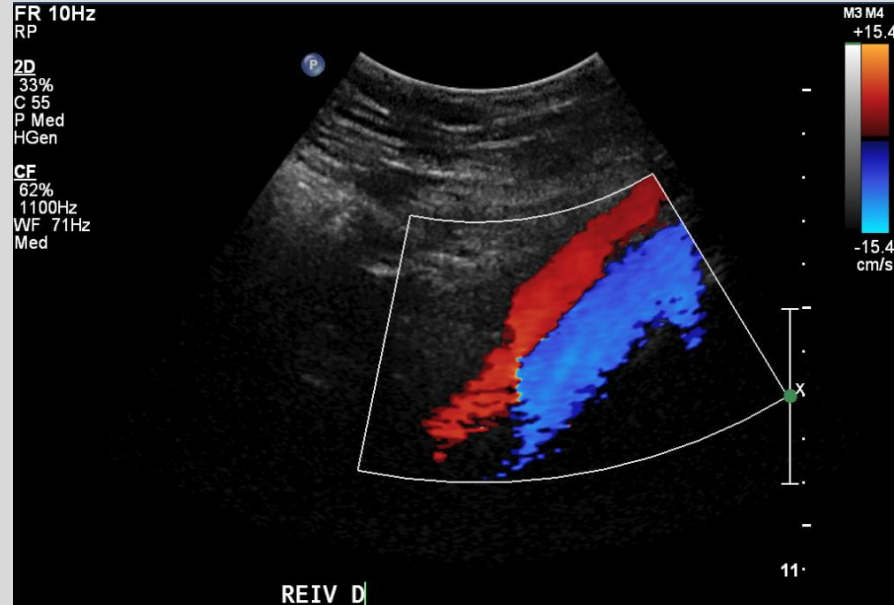
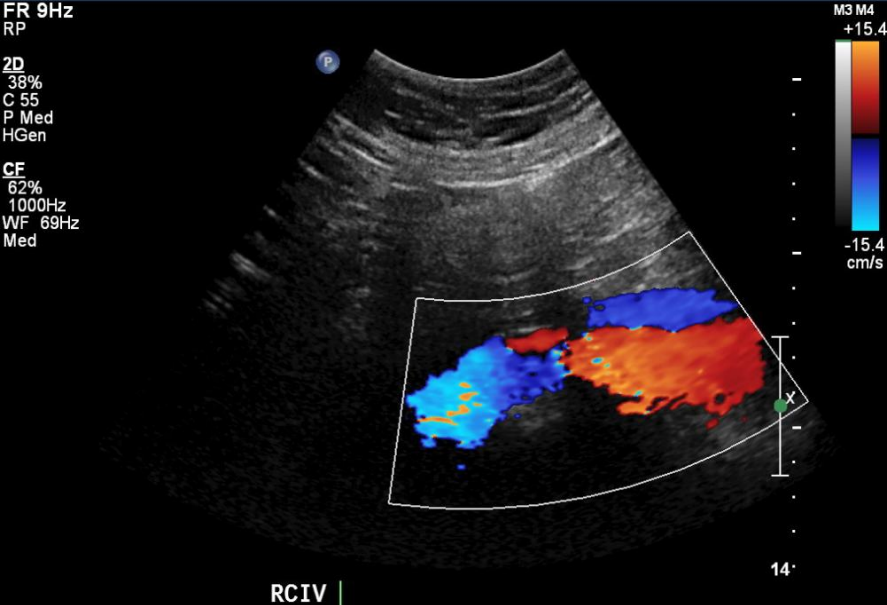
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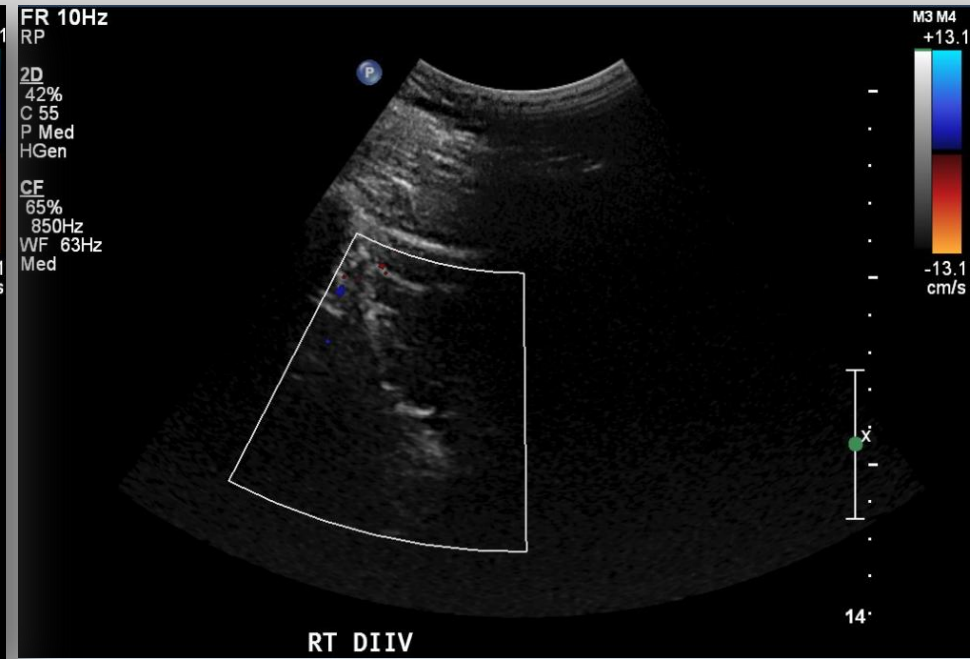
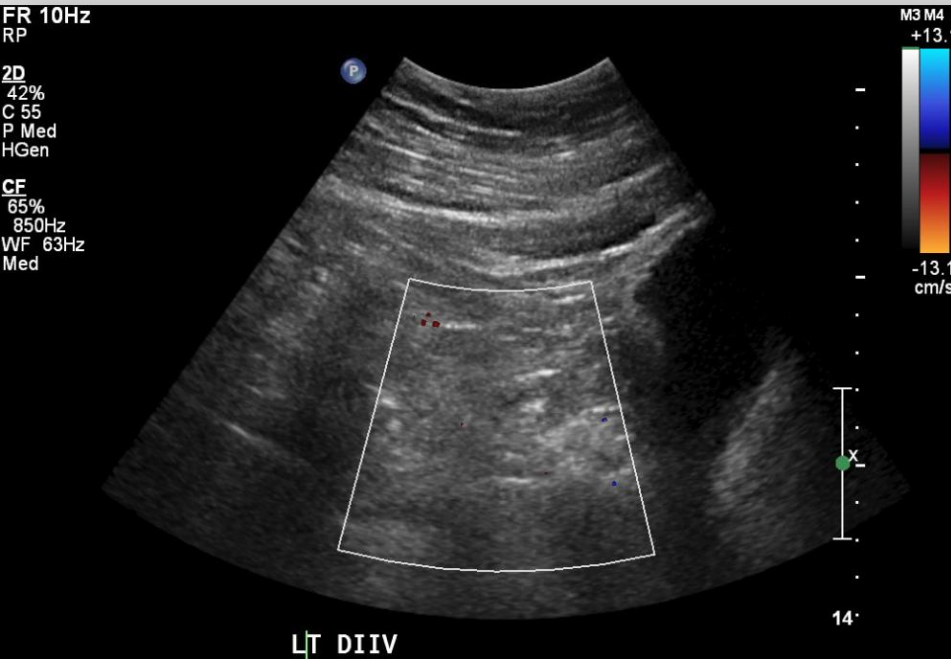
# Imaging of IVC and iliac veins





**IVC and iliac veins were normal.**

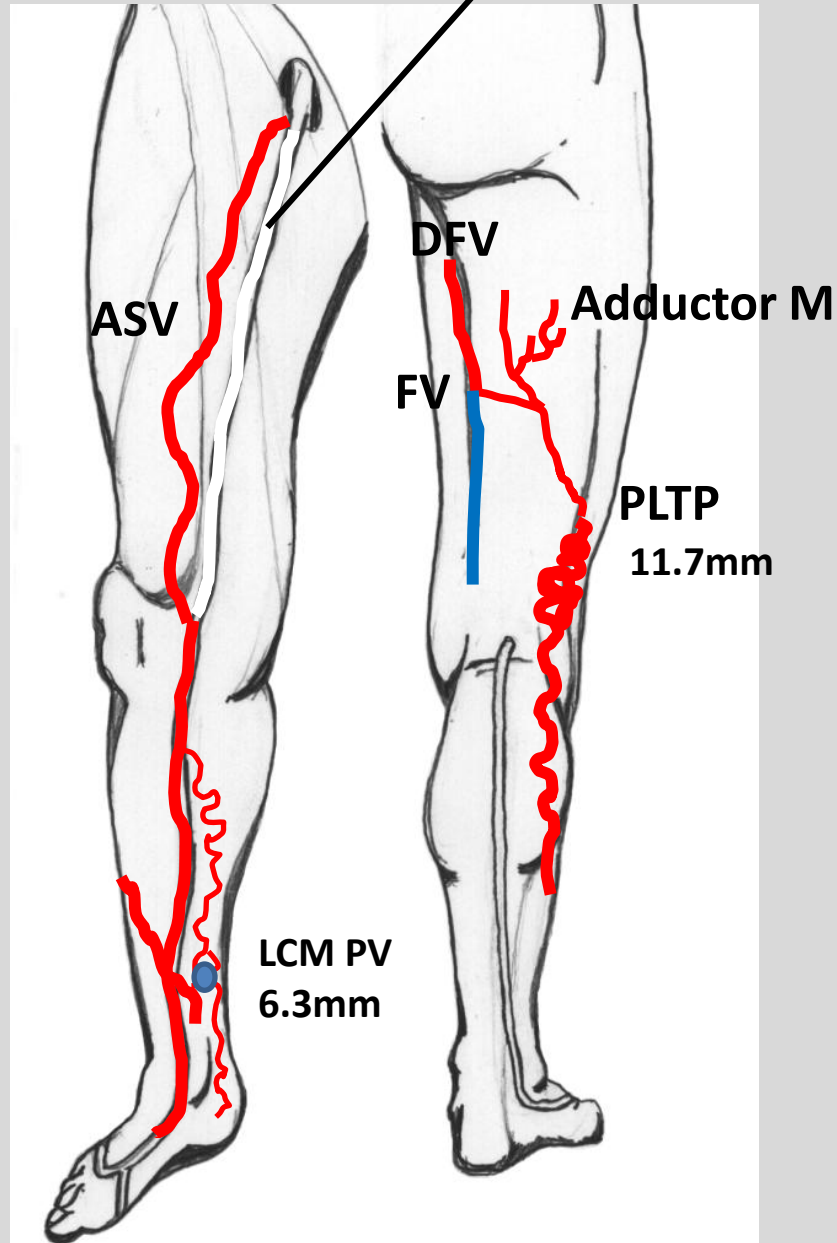
# Imaging of the internal iliac vein tributaries



**There were no tributaries with reflux or malformation in either side.**

C<sub>1-6s</sub> E<sub>P</sub> A<sub>S+P+D</sub> P<sub>R</sub>

GSV occluded



# What should be done?

- a. Continue with compression therapy
- b. Ablate the ASV and remaining GSV
- c. Ablate ASV, GSV, perforator and varicose vein ligation, phlebectomies, UGFS
- d. Ablate perforator veins and perform phlebectomies

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# Treatment plan

**ASV and GSV ablation**

**PLTP ligation**

**Perforator above the ulcer ablation**

**Phlebectomies**

**UGFS in areas with skin damage and the ulcer area**

**Treat the left limb after the right**

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