

Varicose Veins – *how I do it*



Winnipeg Vascular Symposium
Apr 5, 2025

...it comes aortas, carotids, then VVs .. for some

G. Sarwal, MD MEd FRCSC (VSx) CAiR (fellow)

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Disclosures

I have the following relationships with commercial interests:

- **Grants & Research support:** none
- **Travel stipends:** BD Bard, Shockwave, Cook, Penumbra, Inari, Abiomed & Getinge
- **Honoraria:** BD Bard, Terumo, Boston Scientific, Bentley Innomed & Sigvaris
- **Consultant:** Total Flow Medical (ECMO cannulas)



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Varicose Veins

- Defined as elongated, tortuous, dilated superficial veins as a result of venous engorgement and hypertension
- Most typically due to reflux in the axial superficial veins: GSV and or SSV
- RFs:
 - Standing for prolonged periods
 - Obesity
 - Prior DVT
 - Family history
 - Pregnancy
 - Advanced age



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Clinical Features

- **Asymptomatic / Cosmetic**

- **Symptomatic**

Tired, heavy, achy, swollen legs

Worse at end of day, better in AM

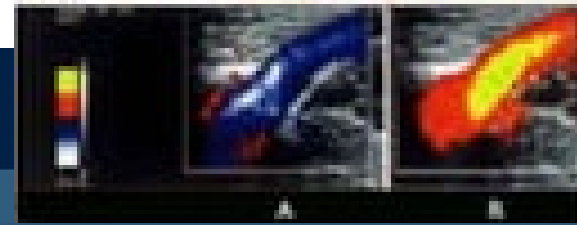
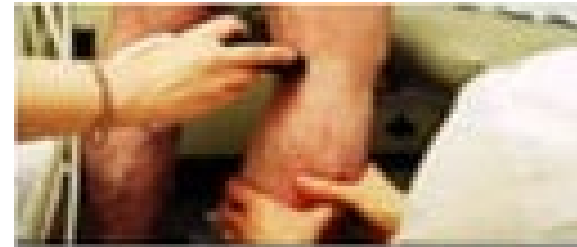
Dull aches, muscle cramps

Tender to palpation

Superficial vs Deep venous thrombosis

Diagnostic Approach

- Comprehensive history
 - Symptomatic vs Asymptomatic/Cosmetic
- Physical exam
 - Bedside doppler assessment of reflux along SSV & GSV
 - Palpation of varicosities for SVT/tenderness
- **Vascular lab** for venous assessment
 - Reflux
 - DVT



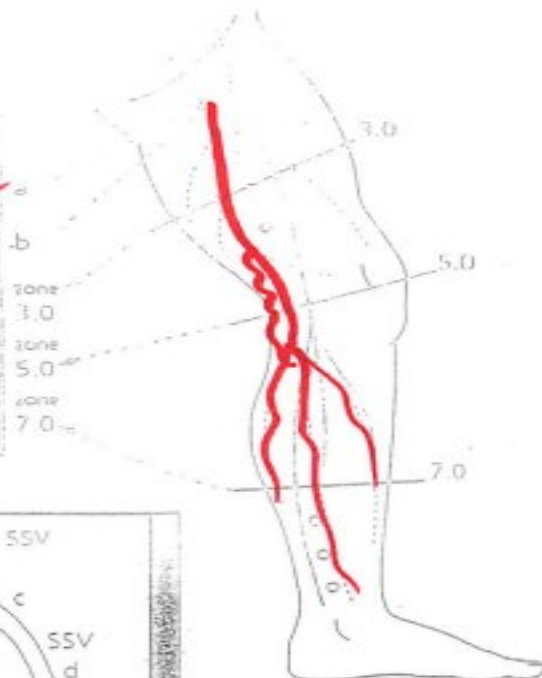
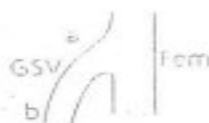
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GSV DEPTH

LEFT

SAPHENO-POPliteal JUNCTION — GSV

Size (mm)	Reflux (0-4 SEC)	Depth (mm)
10	4+	22
9	1	
6		14
6		3
4		



SAPHENO-POPLITEAL JUNCTION — SSV

Size (mm)	Reflux (0-4 SEC)
1	
2	0
2	↓

Zone 7.0 posterior



Other vessel: _____

Reflux: _____
(Normal 0-1/2 max 4+seconds)

Thrombus visualized: () Yes (☒) No

Deep vein obstruction: () Yes (☒) No

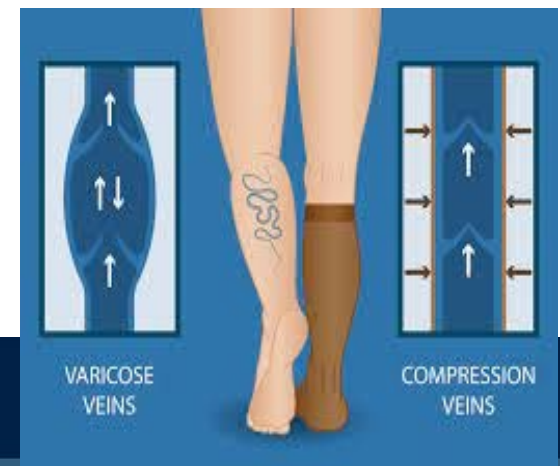
Deep vein insufficiency: ☒ Yes () No

CEV is incompetent



Treatment: Conservative

- Trial of compression stockings to assess response to treatment
 - Below knee: 30-40mmHg
 - Open/close toe
 - Size & fit in office or pharmacy
 - Bauerfeind or Sigvarus or Juzo



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Treatment: Medical

- **Compression sclerotherapy:**
 - Injection of a sclerosant that irritates the venous intima inducing spasm, fibrosis and scarring, thereby obliterating the lumen
 - Ultrasound guided
 - Ex: SDS 1% or 3% depending on:
 - Location
 - Size of varicosity
 - Superficial vs deep
 - +/- foam (1:4 ratio mix with air)



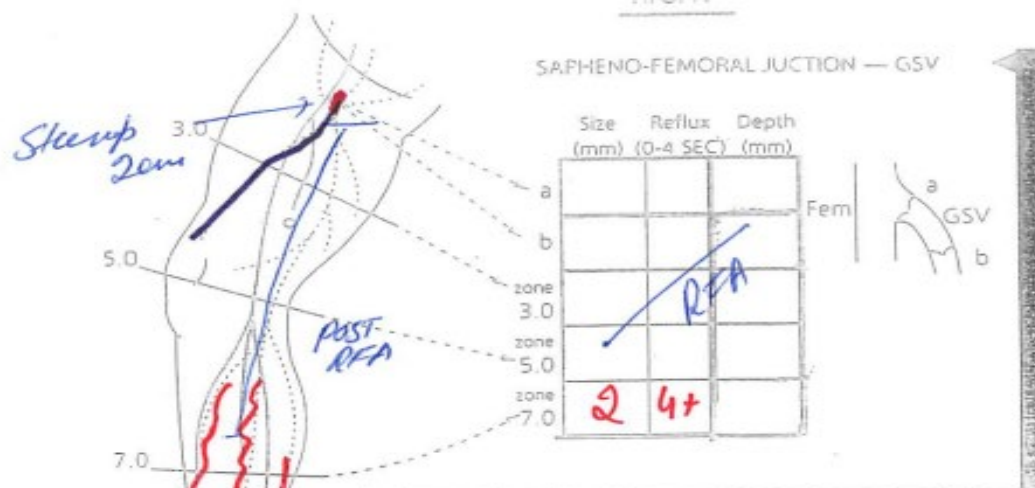
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VASCULAR LAB VENOUS DUPLEX REPORT

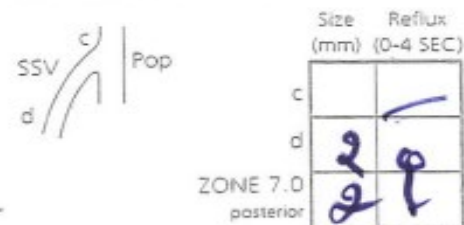
GSV DEPTH

RIGHT

SAPHENO-FEMORAL JUNCTION — GSV



SAPHENO-POPLITEAL JUNCTION — SSV



Other vessel: _____

Reflux: _____
(Normal 0-1/2 max 4+seconds)

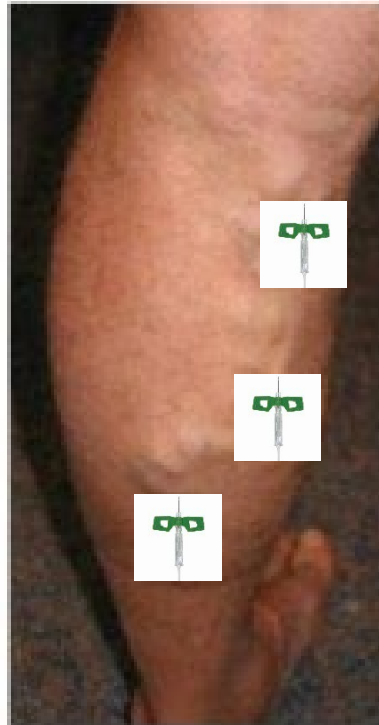
Thrombus visualized: () Yes (☒) No

Deep vein obstruction: () Yes (☒) No

Deep vein insufficiency: () Yes (☒) No

UGS: US guided foam sclerotherapy

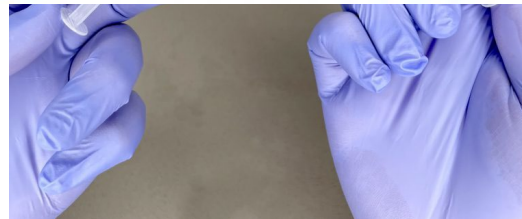
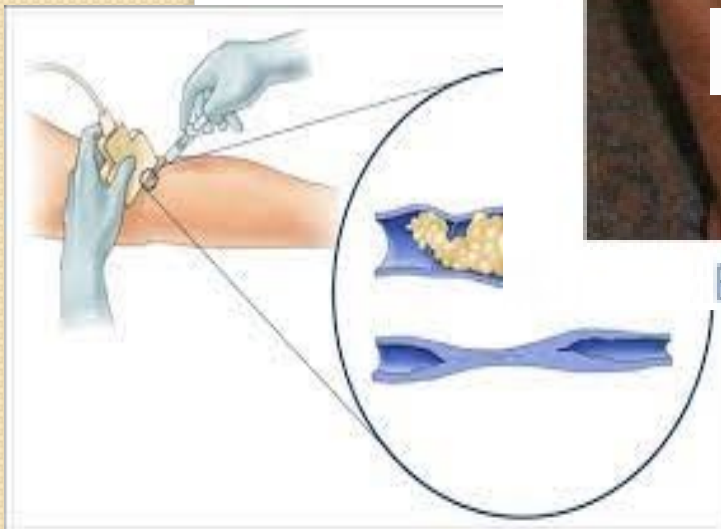
- Min
- Unc
- I vs
 - 1:4



Before



After



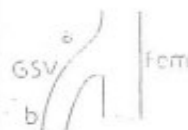
VASCULAR LAB VENOUS DUPLEX REPORT

GSV DEPTH

LEFT

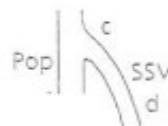
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Size (mm)	Reflux (0-4 SEC)	Depth (mm)
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4		



SAPHENO-POPLITEAL JUNCTION — SSV

Size (mm)	Reflux (0-4 SEC)
1	0
2	0
2	0



Other vessel: _____

Reflux: _____
(Normal 0-1/2 max 4-seconds)

Thrombus visualized: () Yes (☒) No

Deep vein obstruction: () Yes (☒) No

Deep vein insufficiency: ☒ Yes () No

CFV is incompetent



Treatment: RFA

- **Posit**
- Unilat
- **Setti**
- Paul's
- **Anae**
- infusio
- tumer
- **Oper**

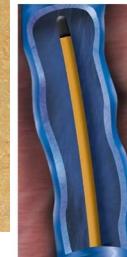
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ablation

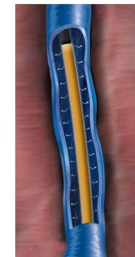
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emifentanil

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Catheter inserted into vein



Controlled heat collapses vein



Catheter withdrawn, closing vein

Medtronic

ClosureFast™ Radiofrequency Ablation System

Technical specifications



ClosureFast Radiofrequency Ablation Catheter

Provides thermal energy to the desired treatment site and relays temperature and other feedback to the RF generator.

Catheter model	CF6-8-60	CF6-8-100	CF7-7-60	CF7-7-100	CF7-3-60
Introducer sheath (min. ID size)	6F (2.0 mm)	6F (2.0 mm)	7F (2.3 mm)	7F (2.3 mm)	7F (2.3 mm)
Insertable length	60 cm	100 cm	60 cm	100 cm	60 cm
Heating element diameter	2.0 mm	2.0 mm	2.3 mm	2.3 mm	2.3 mm
Heating element length	8 cm	8 cm	7 cm	7 cm	3 cm
Max. power setting	40 W	40 W	40 W	40 W	18 W
Default target temp. setting	120 °C	120 °C	120 °C	120 °C	120 °C
Software version: RFG2	4.0.0 or higher	4.0.0 or higher	4.0.0 or higher	4.0.0 or higher	4.4.0 or higher
Software version: RFG3	1.11.0 or higher	1.11.0 or higher	1.11.0 or higher	1.11.0 or higher	1.11.0 or higher
Compatible guidewire	0.025 in	0.025 in	0.025 in	0.025 in	0.025 in

ClosureRFS™ Radiofrequency Ablation Stylet

Delivers bipolar RF energy to desired treatment site and relays temperature and other feedback to the RF generator.

ClosureRFG™ Radiofrequency Generator

Supplies and controls the RF energy delivered to the catheter.

Model

REG3

Short ultrasound view

- 1

► 2

- 3

- 4



Surrounding
tumescence

RF Catheter in
vein

FR32

P85

THI On

HRes2

BG20

DR60

108 / 108



L18-4

Post-RFA care

Soft roll gauze over ablated vein as pressure dressing with 30-40mmHg groin high compression stocking x 1 week, then PRN



Duplex US on PPD 3 to rule out DVT with f/u in thrombosis clinic to review results +/- AC



Clinic f/u in 6-8 weeks



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Before SSV RFA After



Standard of care





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