## The Anterior Saphenous Vein Anatomic And Clinical Considerations For The Vascular Sonographer

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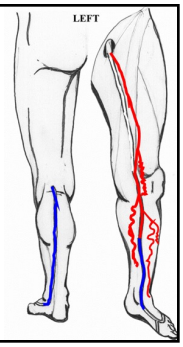


## The Anterior Saphenous Vein

Part 1. The Anterior Saphenous Vein and its clinical implications

Part 2. Anatomic considerations in normal and refluxing patients

Part 3. Systematic review of the literature and payor coverage policies

Part 4. Clinical and technical considerations in treatment

Endorsed by the AVLS, AVF and UIP

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## Part 1. The Anterior Saphenous Vein and its clinical implications

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The confusion surrounding the AASV terminology has far-reaching consequences for patient care and resource utilization. Accurate designation as a truncal saphenous vein is critical

- -selecting the most appropriate treatment options
- -improving intervention planning
- -optimizing long-term patient outcomes

Collaboration among experts, thorough literature review, and consensus building are essential to resolving such uncertainties and improve patient care. Based on this process, the panel unanimously suggests the name of the vein be changed from AASV to ASV to more accurately reflect its anatomic features and clinical importance.

## Part 2. Anatomic considerations in normal and refluxing patients

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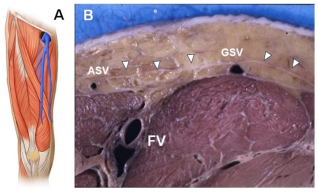
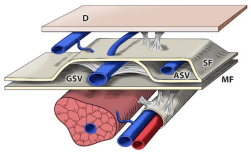
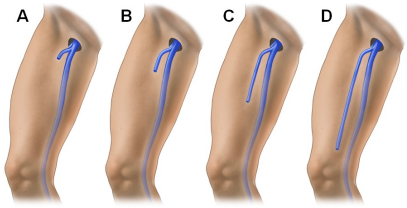



ASV anatomic relations



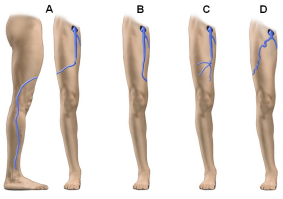

The saphenous compartment




### The extension of the ASV is visible

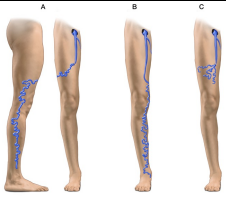
A. Only at the groin
B. At the upper third of the thigh
C. At mid third of the thigh
D. At the lower third of the thigh

Anatomy may change the treatment




### The origin of the ASV

A. From the Anterior Thigh Circumflex Vein which drains the Lateral Plexus.
B. From the GSV trunk.
C. From a net of unnamed veins of the anteromedial thigh.
D. The Anterior Thigh Circumflex Vein may course more vertically in the epifascial plane to drain directly into the SFJ.



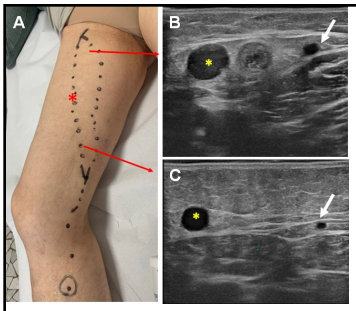

### ASV reflux transmitted to

A. ATCV
B. GSV
C. Unnamed veins of the anteromedial thigh

ASV reflux is shunted to distal GSV. Tributary veins arise in the calf from the refluxing GSV. The GSV is competent above its connection with the ASV.

ASV reflux is shunted to the lateral plexus.

Reflux descending along the ASV is distributed in both legs to unnamed veins of the anteromedial thigh.




An incompetent ASV coexists with a normally sized GSV (white arrows).

The ASV is covered by the saphenous fascia for its entire length, down to the lower thigh where the reflux is transmitted to the GSV.

## Part 3. Systematic review of the literature and payor coverage policies

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There is substantial published evidence, including meta-analysis and expert consensus, supporting treatment of ASV reflux when it is the source of venous symptoms, and thus there is no reasonable clinical rationale to consider its treatment experimental or unproven.

It is entirely without a sound evidenced based clinical foundation to require treatment of a normal GSV prior to the treatment of ASV reflux.

Likewise, it is currently without clinical rationale or support from published evidence to treat a normal ASV concomitantly with a refluxing GSV.

Given the variability of its confluence with the deep system, reflux in the SFJ as a requirement for treatment, regardless of GSV or ASV, is unfounded.

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Just as it has been shown for GSV reflux treatment, when symptomatic ASV reflux is present, ASV treatment with ablation has excellent outcomes that can improve patient quality of life.

Given the challenges to obtain authorization from some payers to treat ASV reflux, vein experts should continue to advocate to insurance carriers to update their policies to reflect the substantial clinical evidence on this subject.

Without such advocacy and revision of inappropriately restrictive treatment policies, many patients will be excluded from effective therapy and thus be subject to ongoing risks of SVT, DVT, and venous ulceration that could simply be treated if such policies were not prohibitive.

## Part 4. Clinical and technical considerations in treatment

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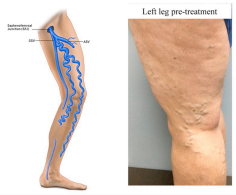
| | Reflux time (ms) | Diameter (mm) |
|---|---|---|
| SFJ | 4707 | 6.2 |
| SPJ | n/a | n/a |
| GSV | 5798 | 6.5 |
| ASV | 5506 | 5.8 |
| PASV | n/a | n/a |
| SSV | 2190 | 5.9 |
| Tributaries (range) | 1733 | 6.1 - 8.7 |




| | Reflux time (ms) | Diameter (mm) |
|---|---|---|
| SFJ | 1417 | 10.9 |
| SPJ | 3328 | 3.4 |
| GSV | 0 | 4.1 |
| ASV | 801 | 6.9 |
| PASV | n/a | n/a |
| SSV | 0 | 3.7 |

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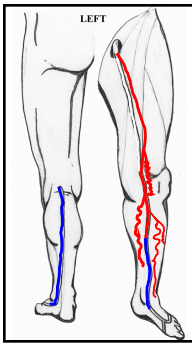
| | Reflux time (ms) | Diameter (mm) |
|---|---|---|
| SFJ | 1814 | 10.3 |
| SPJ | 0 | 4.0 |
| Prox. GSV | 0 | 2.1 |
| Mid GSV | 688 | 4.7 - 6.4 |
| Distal GSV | 7687 | 3.7 - 4.2 |
| ASV | 4109 | 7.7 |
| PASV | n/a | n/a |
| SSV | 1430 | 4.3 |
| Tributaries (range) | 2143 | 4.3 - 4.5 |


| | Pre-treatment 2017 | | Pre-treatment 2022 | |
|---|---|---|---|---|
| | Reflux time (ms) | Diameter (mm) | Reflux time (ms) | Diameter (mm) |
| SFJ | 1876 | 11.6 | 3158 | 8.3 |
| GSV | 5927 | 7.7 | n/a | Closed |
| ASV | 0 | 3.3 | 3142 | 6.2 |
| PASV | n/a | n/a | n/a | n/a |
| SSV | 3841 | 5.3 | 0 | 4.9 |




## $C_{1,2s}$ $E_p$ $A_s$ $P_r$

60-year-old female

Mild pain and leg discomfort at the end of the day

Varicose veins mostly on the left limb

3 pregnancies

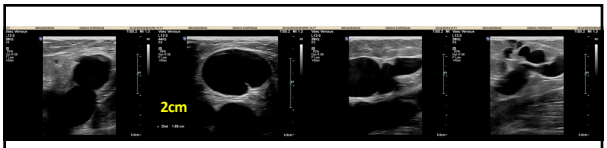
Hysterectomy four years ago

Hypertension controlled with Losartan 50 mg

Family history of venous insufficiency and hypertension

GSV aplasia in the thigh

ASV replaces GSV




ASV union at SFJ

ASV aneurysm at 5 cm Below SFJ

ASV very tortuous below the aneurysm

Multiple varicosities at midthigh and below

Very close to deep vessels

GSV was normal

All the information is important to plan the treatment.

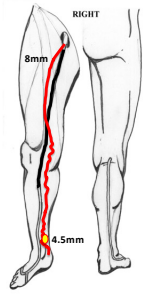
## $C_{1\text{-}6rs}$ $E_{P,S}$ $A_{S,P,D}$ $P_{R,O}$

Reflux in the right ASV in continuity with varicose veins extending to the ulcer.

Multiple incompetent tributaries and a pathologic perforator were present.

He also had post-thrombotic changes in the deep veins of both lower extremities. There was reflux from the popliteal to the plantar veins.

GSV was ablated and remained occluded.



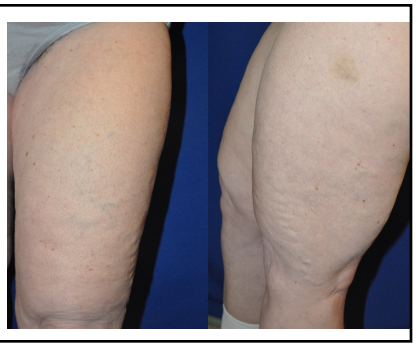

64-year-old woman with a history of varicose veins and pain along them.

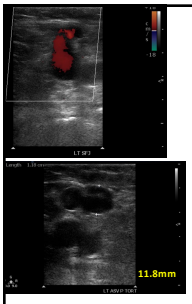
She underwent left lower extremity GSV ablation 4 years ago. Varicosities are still present after ablation.

PMH – No medical problems and no history of DVT.

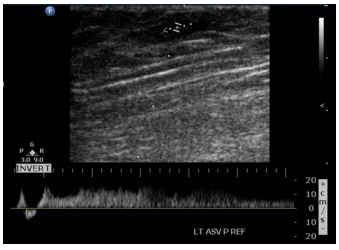
Medications – none

Family History – Varicose veins from her father






Very tortuous ASV with no straight segment




Phlebectomies, foam or both

## Anterior Saphenous Vein

Variable anatomy

- Fascial course
- Tortuous

May have reflux alone or together with

- Pelvic veins
- ATCV
- GSV
- SSV

Should be aware of the anatomy and the reflux patterns to provide optimal care.