
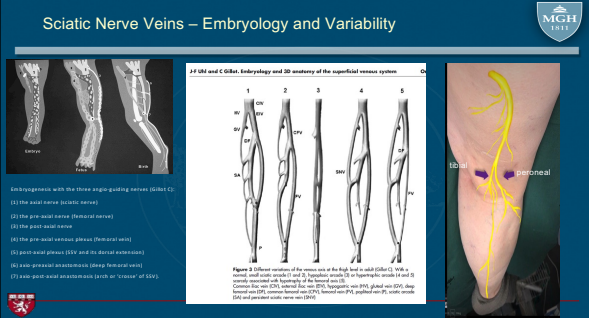

Treatment for Incompetent Sciatic Veins
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 Harvard Medical School
 New York City, 2024

No disclosures


Sciatic Nerve Veins – Embryology and Variability



Embryogenesis with the three major guiding nerves (S1-S3):
 (1) The axial nerve (pubic nerve)
 (2) The pre-axial nerve (femoral nerve)
 (3) The post-axial nerve (peroneal nerve)
 (4) The post-axial nerve (peroneal nerve)
 (5) The post-axial nerve (peroneal nerve)
 (6) The post-axial nerve (peroneal nerve)
 (7) The post-axial nerve (peroneal nerve)

Figure 5. Evaluation showing the origin, course and tributaries of the peroneal sciatic vein...

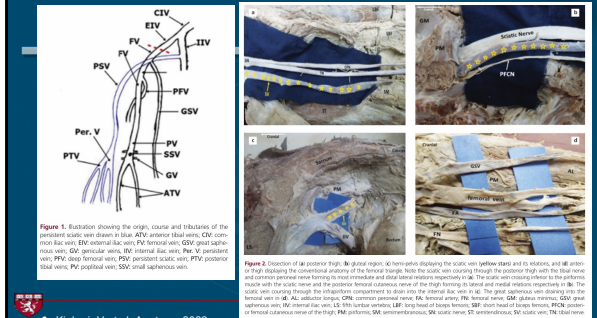
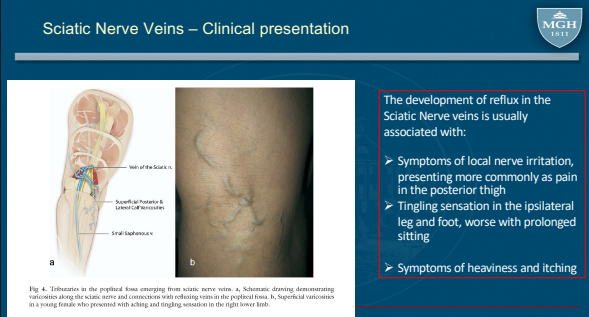


Figure 5. Evaluation showing the origin, course and tributaries of the peroneal sciatic vein drawn in blue. CVV anterior tibial vein, CW common iliac vein, EV external iliac vein, PV femoral vein, QV great saphenous vein, GV genicular vein, BV internal iliac vein, Per. V peroneal vein, PTV deep femoral vein, PV posterior sciatic vein, PTV posterior tibial vein, PV superficial vein, SV small saphenous vein.

Sciatic Nerve Veins – Clinical presentation



The development of reflux in the Sciatic Nerve Veins is usually associated with:
 > Symptoms of local nerve irritation, presenting more commonly as pain in the posterior thigh
 > Tingling sensation in the ipsilateral leg and foot, worse with prolonged sitting
 > Symptoms of heaviness and itching

Patterns of sciatic nerve venous drainage –

Veins along the course of the sciatic nerve

Niam Lalaportas, PhD, DSc, BVSc; Agostino K. Tziogianopoulos, MD; Antonios P. Gougoulis, MD, BVSc; Boon Philip, MD; and Peter J. Fagan, MD; J Bone Joint Surg, 2014; 96: 1000-1007

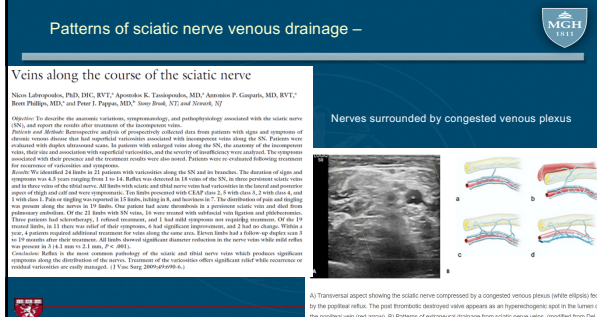
Objective: To describe the anatomic variations, embryogenesis, and pathophysiology associated with the sciatic nerve (SN) and report the results after treatment of the incompetent veins.

Patient and Method: Retrospective analysis of prospectively collected data from patients with signs and symptoms of chronic venous disease that suggested reflux associated with incompetent veins along the SN. Patients were evaluated with duplex ultrasonography. In patients with refluxic veins along the SN, the pattern of the incompetent veins, their size and association with superficial varicosities, and the severity of insufficiency were analyzed. The symptoms associated with this pattern and the treatment results were also noted. Patients were followed during follow-up treatment for occurrence of recurrences and symptoms.

Results: We identified 24 limbs and 12 patients with refluxic veins along the SN and its branches. The location of signs and symptoms was a 4.2 cm ranging from 1 to 14. Reflux was detected in 14 veins of the SN, in three peroneal veins and in three veins of the tibial nerve. Refluxic veins with sciatic and tibial nerve reflux were located in the lateral and posterior parts of thigh and calf and were accompanied by 14 limbs, including 8 and 6 limbs in 11. The distribution of pain and tingling was greatest along the entire SN limb, the patient had more discomfort in a peroneal sciatic vein and distal than proximal sciatic vein. Of the 24 limbs with SN reflux, 18 were treated with superficial vein ligation and phlebectomy. Three patients had sclerotherapy, 1 failed treatment, and 1 had distal symptoms not requiring treatment. Of the 14 limbs treated, 13 show no relief of their symptoms, 1 had significant improvement, and 2 had no change. Within a long 2-year period, additional treatment for veins along the sciatic nerve. There were 14 limbs with refluxic veins and 14 limbs with refluxic veins. In 14 limbs, the patient had more discomfort in a peroneal sciatic vein and distal than proximal sciatic vein. In 14 limbs, the patient had more discomfort in a peroneal sciatic vein and distal than proximal sciatic vein. In 14 limbs, the patient had more discomfort in a peroneal sciatic vein and distal than proximal sciatic vein.

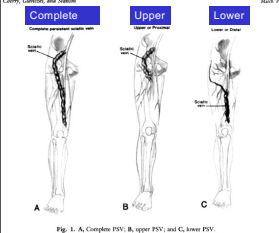
Conclusion: Reflux in the most common pathologies of the sciatic and tibial nerve veins which produces significant symptoms along the distribution of the nerve. Treatment of the varicosities either ligature with radiofrequency or treated varicosities are usually managed. J Bone Joint Surg, 2014; 96: 1000-1007.

Nerves surrounded by congested venous plexus



A) Transverse aspect showing the sciatic nerve compressed by a congested venous plexus (white ellipses) fed by the posterior vein (PV). B) Patterns of venous drainage from sciatic nerve veins, modified from De Santis et al.

Persistent Sciatic Veins (PSV)



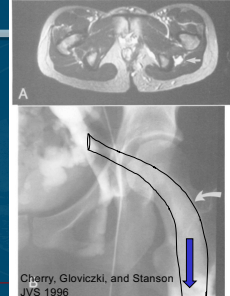
Cherry, Glivoczki, and Stanson
Complete PSV **Upper PSV** **Lower PSV**

JOURNAL OF VASCULAR SURGERY
 Vol. 23, No. 3, pp. 418-424, 2001

- PSV is a rare congenital vascular anomaly
- Most often associated with KTS
- Frequently bilateral
- ~30% present with PE, AVM's common, pelvic pain and rectal bleeding common
- Imaging with Duplex and confirmatory MRV, CTV or Venography
- 3 variations
 - Complete (full length thigh and buttock) terminating in internal iliac system
 - Upper terminating in iliac, but ending extending only in proximal thigh
 - Lower extending from popliteal fossa to mid thigh and then terminating in CFV
- Usually no valves in the PSV's
- Venous reflux/inflammation causes neuro symptoms


Fig. 1. A, Complete PSV; B, upper PSV; and C, lower PSV.

Complete PSV



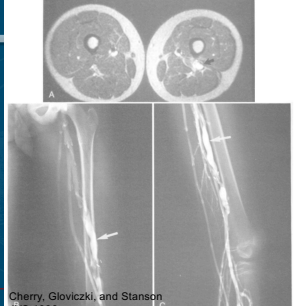
Cherry, Glivoczki, and Stanson
JVS 1996

Upper PSV



Cherry, Glivoczki, and Stanson
JVS 1996

Lower PSV



Cherry, Glivoczki, and Stanson
JVS 1996

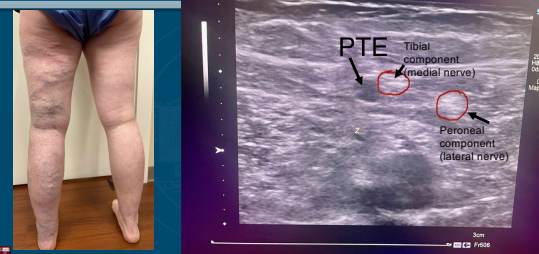
PSV Guidelines

CLINICAL PRACTICE GUIDELINE DOCUMENT
European Society for Vascular Surgery (ESVS) 2022 Clinical Practice Guidelines on the Management of Chronic Venous Disease of the Lower Limbs

4.6.8.6. Unusual varicose vein locations. Sometimes, VVs arise from unexpected anatomical locations. Imaging other than DUS might be useful to identify these rare sources of reflux. In a large series of 1 350 lower extremity VV cases evaluated by DUS and CT, 10.3% had an unusual site of reflux. The most common were vulvoperineal 83.5% and round ligament VVs (5%), both related to pelvic venous incompetence (PVI) (see Chapter 7), followed by persistent sciatic vein incompetence (5%) and intraosseous PV incompetence (2.2%).

Sciatic vein incompetence can be either an isolated finding or associated with congenital venous malformations. It represents a form of developmental anomaly and is classified into three types based on its extent: complete (from the POPV to the IV, traversing the sciatic notch), proximal (from the upper thigh to the pelvis, traversing the sciatic notch), or distal (confined to the middle and distal thigh, extending into the DFV or subcutaneous veins). Persistent sciatic vein incompetence below the knee easily can be mistaken for reflux of the SSV. The preferred treatment for sciatic vein incompetence is UGS.

Lower PSV Case



PTE **Tibial component (medial nerve)** **Peroneal component (lateral nerve)**

MGH VASCULAR WRN 8 3:08:51 PM (11/13/2023)

Case – from Dr. Mark Meissner with Upper PSV

S_{2,3b}

- History:
 - 45 yo G2P2 female
 - 5 yr history of pelvic heaviness and fullness
 - Sensation of incomplete bladder emptying
 - Right gluteal pain radiating to popliteal fossa
- PMH:
 - Thyroid adenoma, depression, anemia
- PE:
 - Bilateral "O" point tenderness
 - Bulge along right lateral vaginal wall
 - Few Popliteal fossa varicos

Source	N	%
Postero-lateral Thigh	42	47
Valvar	18	20
Gluteal	11	12
Sciatic Nerve	9	10
Popliteal Fossa	7	8
Knee	3	3
Total	90	100

Pelvic Duplex Ultrasound

- Dilated bilateral gonadal veins with left sided OV reflux
- NO iliac vein compression
- Dilated peri-uterine veins with reflux in pelvis
- Gluteal escape point noted
- Sciatic nerve varicosities distal posterior thigh

V_{2,3b} P₁IGVR.NT: Pelv.R.NT

Proximal evaluation for pelvic pain –

Case continued from Dr. Meissner

Pelvic Venography

Occlusion Balloon

Sciatic Varices

3% STS Foam Sciatic Varices
Coil Embolization IGV

Attending: Mark H Meissner

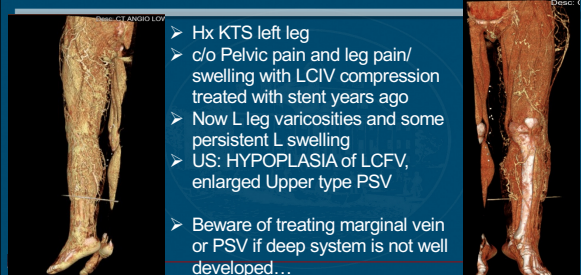
Have R calf pain which worsens throughout the course of the day and is incompletely relieved with the daily use of compression stockings. Ultrasound at the bedside demonstrates 4-6 mm gastrocnemius veins as well as varices associated with her sciatic nerve in the distal third of the thigh. The latter could be addressed with ultrasound-guided sclerotherapy and/or minimally-invasive surgical debridement, which the patient would like to consider. The nexts including compartment syndrome and sciatic nerve entrapment, have been reviewed in detail with the patient.

pelvic pain has essentially completely resolved although she does continue to

- No further pelvic pain, PSV occluded
- Still has pain right posterior calf/ popliteal fossa
- Planned ultrasound guided sclerotherapy of sciatic nerve veins

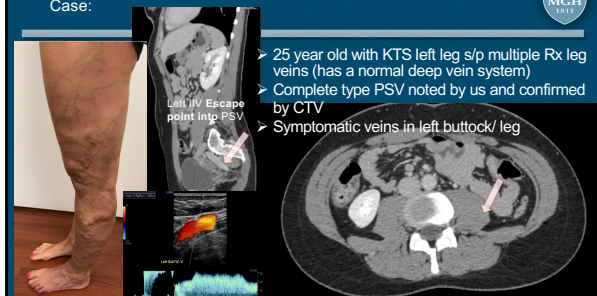
SCIATIC NERVE VV LT POST KNEE

Case:

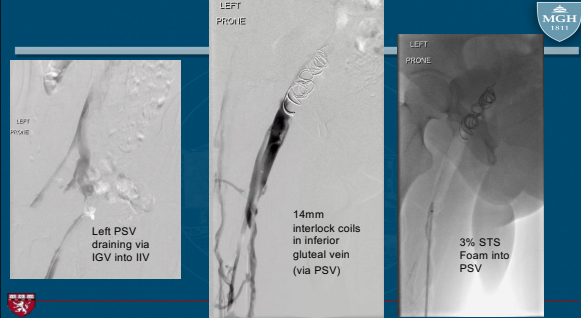


- Hx KTS left leg
- c/o Pelvic pain and leg pain/ swelling with LCIV compression treated with stent years ago
- Now L leg varicosities and some persistent L swelling
- US: HYPOPLASIA of LCFV, enlarged Upper type PSV
- Beware of treating marginal vein or PSV if deep system is not well developed...

Case:



- 25 year old with KTS left leg s/p multiple Rx leg veins (has a normal deep vein system)
- Complete type PSV noted by us and confirmed by CTV
- Symptomatic veins in left buttock/ leg

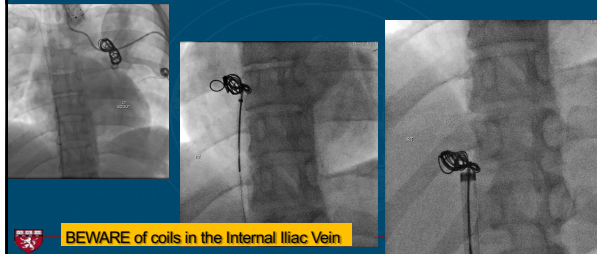


Left PSV draining via IGV into IIV

14mm interlock coils in inferior gluteal vein (via PSV)

3% STS Foam into PSV

Follow up: 14 days post procedure, sudden onset chest pain...



BEWARE of coils in the Internal Iliac Vein

Follow up Continued:

- No further pelvic pain
- No further neurologic / sciatic pain
- Continued LE symptomatic varicosities well controlled with conservative measures (KTS is lifelong maintenance)
- Marked improvement in her leg s/p foam sclerotherapies
- Just BEWARE of coils in the PSV or IIV

Thank you