Persistent Leg Pain in a Cross Country Runner

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Disclosures

- I have no financial or conflicts of interest to disclose

Initial Presentation

- **25 yo female presents with 10 years of exertional bilateral leg pain**

- Previously seen at outside hospital, presents to office with worsening symptoms
- Described as pain, swelling, and numbness bilateral lower legs, left worse than right
- Symptoms now present with activities of daily living
- Worse in the morning with moderate swelling below the knee
- Numbness associated with “dead foot” sensation

Medical History

- PMHx
  - CECS, Anemia (resolved)
- Medications
  - Celecoxib, pantoprazole, vitamin D
- Allergies
  - Penicillins
- Surgical Hx
  - Bilateral four compartment fasciotomy (2012), Left 2 compartment fasciotomy (2015), Right 2 compartment fasciotomy (2016)
- Family Hx
  - Mom and dad healthy
- Social Hx
  - nonsmoker, social alcohol, no illicits, runner

Past Medical History

- Former collegiate runner, symptoms began when increasing exercise level during high school track, worsened significantly in college
- At that time symptoms after 6 minutes (left) /12 minutes (right) of exercise
- Swelling, pressure, “tension” bilateral lower legs
- Felt worst anteriorly and laterally
- No discoloration or temperature changes

Past Medical History

- 2012: positive compartment testing with subsequent bilateral 4 compartment fasciotomy
- Initial improvement, gradual return of symptoms
- 2015: 2 compartment release left
- 2016: 2 compartment release right

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Previous treatment

- s/p multiple cycles of physical therapy
- Gait analysis/training
- New shoes
- NSAIDs

Physical Exam

- General
  - Well appearing in no apparent distress
- Cardiac
  - No regular rate and rhythm, no murmurs rubs or gallops
- MSK
  - Normal gait
  - Bilateral healed **fasciotomy scars**, no significant erythema, ecchymosis, rashes
  - Normal proprioception, pain free single leg toe raises
- Vascular
  - **+1 bilateral pitting edema LE below knee**
  - 2+ DP and PT with **diminished pulses left>right with knee extension and dorsiflexion**
- Neuro
  - Intact sensation to light touch
  - Negative tinel at fibular head and tarsal tunnel

Differential Diagnosis

- Popliteal Artery Entrapment
- Peroneal Nerve Impingement
- Exertional Compartment Syndrome
- Dependent Edema
- Neuropathy

Recommendations

- MRA with dorsiflexion and plantarflexion
- Consider consultation with Vascular pending results
- EMG possible next step if MRA normal
- Wound consider cardiac work up

Results

- MRA with dorsiflexion and plantarflexion
  - Normal popliteal artery waveform and velocities at rest, plantarflexion, and dorsiflexion
  - **Patent popliteal veins bilaterally with almost complete obliteration with dorsiflexion**
- Consider consultation with Vascular pending results
  - **Ordered**

Vascular Consultation

- History
  - No prior DVTs, family history of hemophilia (brother), patient known to be a carrier, has had heavy periods and gingival bleeding
- Physical Exam
  - 2+ pulses carotid, subclavian, radial, ulnar, popliteal, dorsalis pedis, posterior tibialis
  - 1+ leg swelling at rest
  - No popliteal bruit with heel raises but reproduced symptoms left>right
  - Supine knee hyperextension and ankle dorsiflexion reproduced symptoms

Vascular Consultation

- Office Vascular US
  - Normal arterial velocities with dorsiflexion
  - **Bilateral popliteal vein compression** with dorsiflexion
- Working Diagnosis
  - Venous popliteal entrapment
- Recommendations
  - Compression
  - Rest from activities
  - IR referral for further imaging

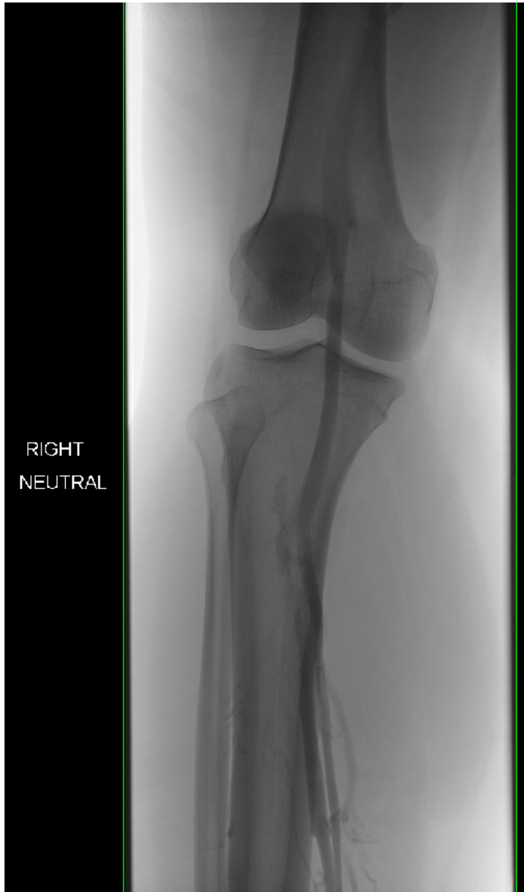
Interventional Radiology Consultation

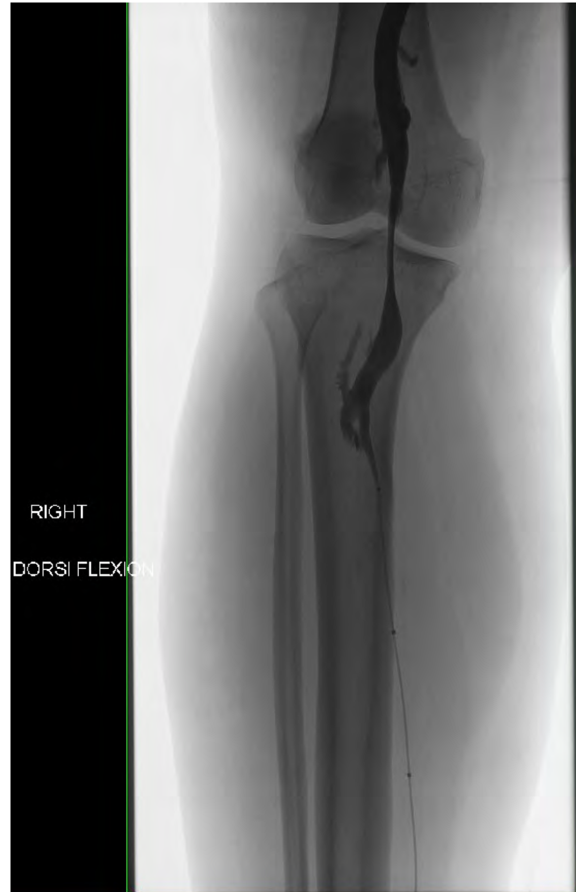
- History
  - Symptoms had improved with rest but returned immediately with any attempt to resume exercise
  - Now **predominantly moderate swelling in the lower legs**
  - Now notes **mild thigh swelling**
- In office US
  - Significant soft tissue edema calves and thighs
  - Normal venous flow, no change with provocative maneuvers
- Working Diagnosis
  - Possible popliteal venous entrapment however edema of thighs unexplained
- Recommendation
  - Bilateral lower extremity diagnostic venogram with maneuvers

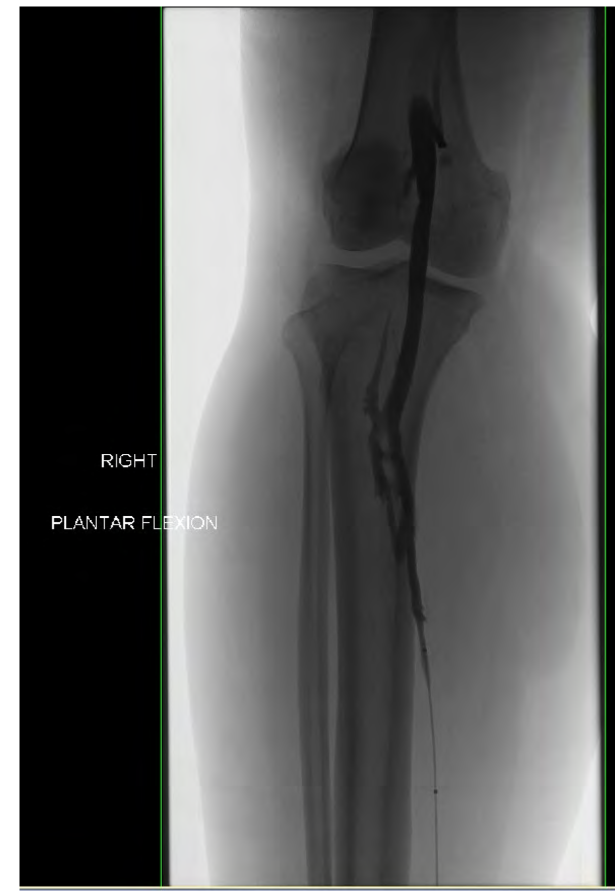
Testing

- Venogram
  - Right:
    - Patent posterior tibial, popliteal veins
    - **Extrinsic compression of popliteal vein with dorsiflexion** that releases on plantar flexion and neutral position
    - Patent femoral vein, normal iliac vein and IVC
  - Left:
    - Patent posterior tibial, popliteal veins
    - **Extrinsic compression of popliteal vein with dorsiflexion** and releases on plantar flexion and neutral position
    - Patent femoral vein
    - Patent iliac vein but mild reflux to small pelvic and peri-uterine collaterals (possible compression)
      - **May-Thurner?**

Testing







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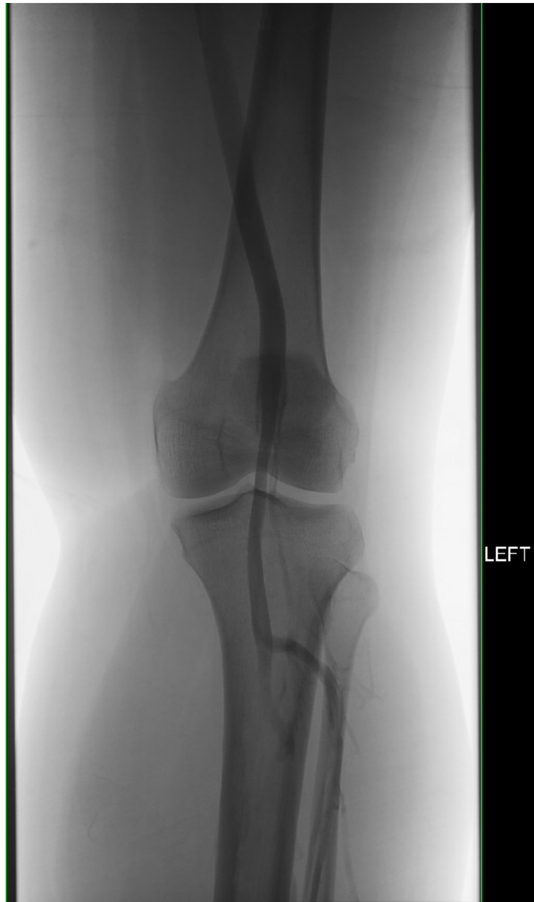

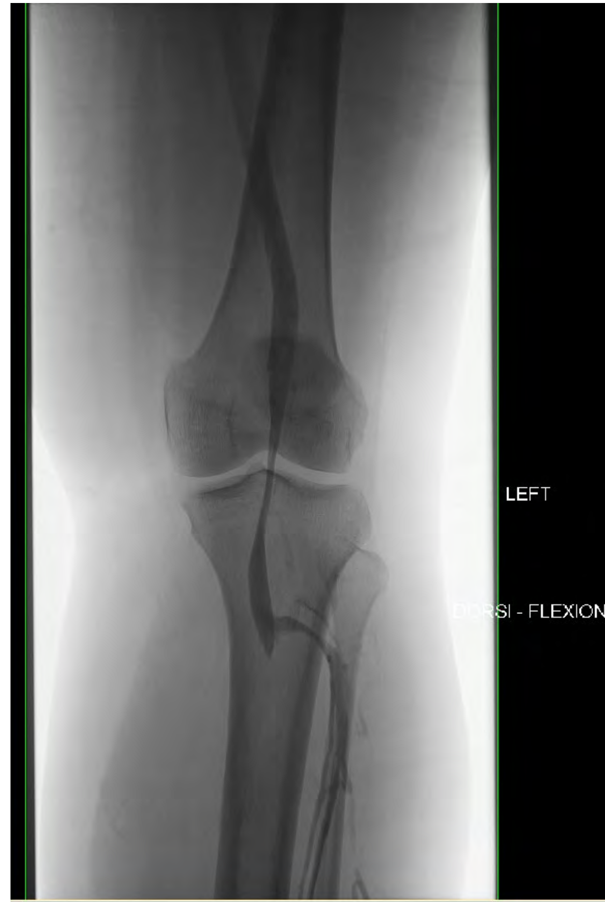

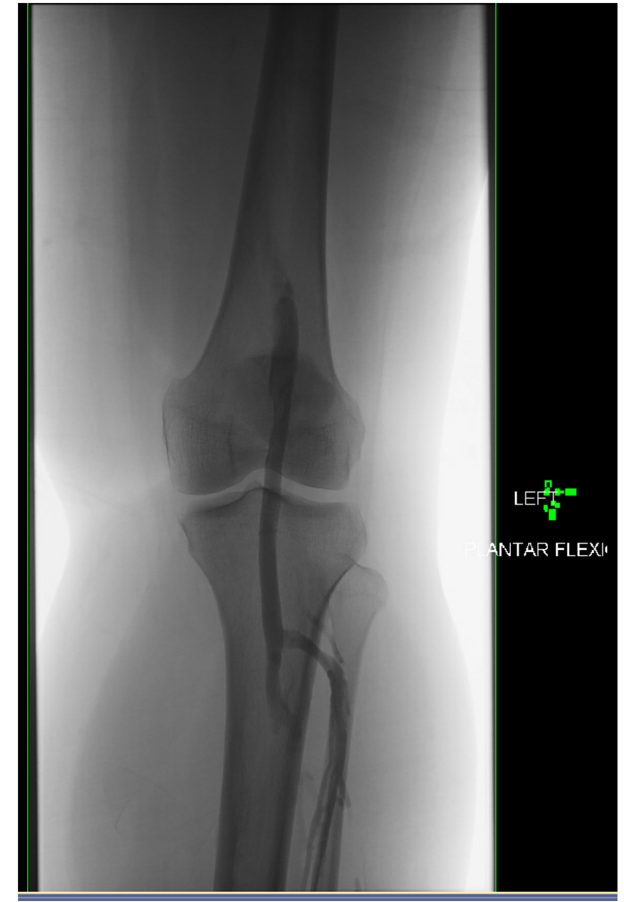

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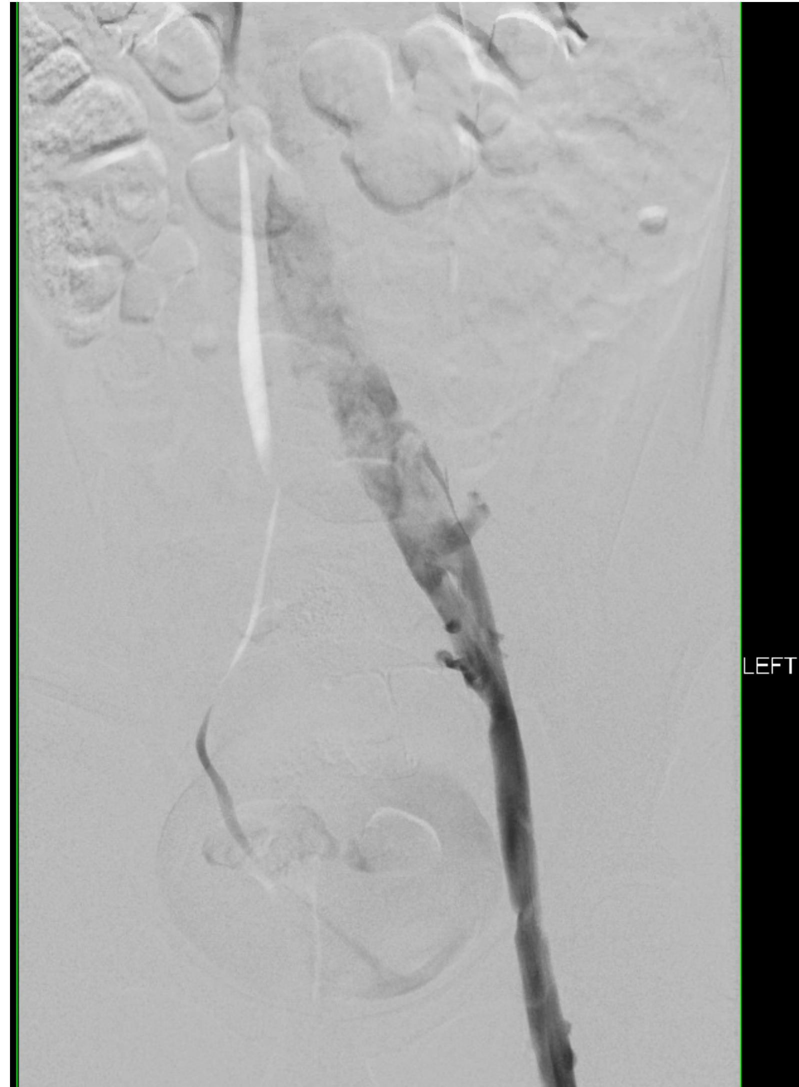

Recommendations

- Dedicated Knee MRI to evaluate causes of extrinsic compression
- Consider MRV for better evaluation of left iliac vein
- Continue activity modification, compression

Discussion

- Diagnosis: Popliteal venous entrapment, possible May Thurner
- Pending evaluation: Knee MRI, MRV
- Treatment
  - Would consider surgery to relieve extrinsic compression
  - iliac vein stenting if +May Thurner
- General considerations
  - Consider vascular early on
  - Hemophilia trait protective for DVT?
- Osteopathic considerations
  - System based practice
    - Interprofessional health care team for optimal patient care

Thank you!

- Questions?