

# Two PAES In A Pod

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## Background

- Patient is a 18 year old female collegiate soccer player with no significant past medical history who presented to the clinic due to worsening calf cramping and pain during exercise. Athletic trainers were unable to find pedal pulses for 30 minutes after the patient complained of bilateral feet paresthesias. She denies any prior exertional compartment syndrome, low back pain or prior injury.

## Physical Exam

General: no acute distress

Lower extremities: pedal pulses and sensation intact bilaterally.

Right knee: full ROM, 5/5 strength. No tenderness or swelling. No instability. Normal alignment. No pretibial edema. No varicosities.

## Differential Diagnosis

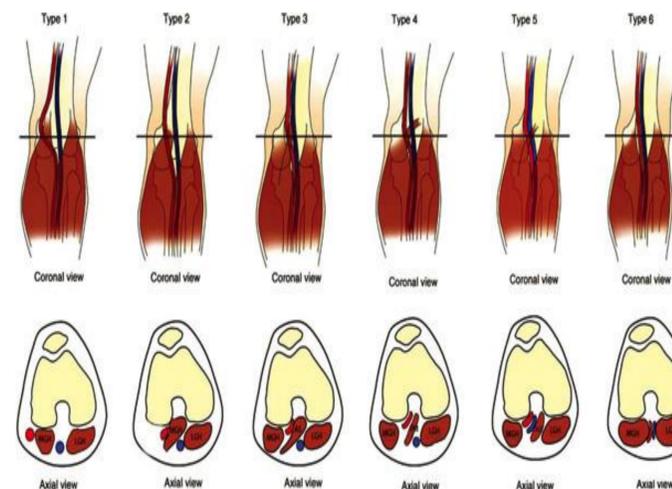
- Exertional Compartment Syndrome
- Nerve Entrapment Syndrome
- Vascular Claudication
- Deep Vein Thrombosis
- Popliteal Artery Entrapment Syndrome

## Diagnostic Imaging/Studies

**MRI Right Lower Extremity:** No anatomical abnormalities, no acute interosseous findings.

**Lower Extremity Arteriogram:** Loss of waveform in the popliteal artery with plantar flexion in left knee (seen on poster)

**Post-Exercise Compartment Pressures (Rt LE):** Anterior: 25 mmHg, Lateral: 29 mmHg, Posterior: 26 mmHg (elevated in all compartments)



## Diagnosis and Treatment

**Final Diagnosis:** Popliteal Artery Entrapment Syndrome

**Surgery:** Right Popliteal Artery Decompression

## Discussion

- Popliteal Artery Entrapment Syndrome is a very rare limb threatening vascular entity which affects 0.17-3.5% of the general population and is associated with an embryological developmental anomaly due to an aberrant relationship with the popliteal artery and the surrounding myofascial structures. It is classified into six different classes based on the relationship of the gastrocnemius to the popliteal artery
- Patients complain of pain in their feet and calves that occurs with exercise and resolves with rest. Patients typically present with leg and foot claudication, numbness, paresthesia, discoloration, pallor and coolness. On physical exam you will often find hypertrophy of the calf muscles. Patients who are symptomatic require surgery, decompression of the popliteal artery, which will resolve their symptoms. Patients may also require a prophylactic four compartment fasciotomy to prevent extremity compartment syndrome.
- In this case, we believed the elevated compartment pressures were elevated secondary to PAES causing compartmental ischemia. Therefore, the initial surgical treatment was a Popliteal Artery Decompression with a potential return to the OR for a fasciotomy if there was no change in compartment pressure
- Recent research has shown that long term untreated PAES can cause chronic vascular insufficiency

## Return to Activity

- 1 week after surgery, patient began non-impact aerobics.
- Roughly 4 weeks after surgery, patient's activity was advanced and well tolerated. Repeat testing to assess blood supply was completed and within normal limits.

## References

- Davis DD, Shaw PM. Popliteal Artery Entrapment Syndrome. [Updated 2022 May 1]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK441965/>
- Gokkus K, Sagtas E, Bakalim T, Taskaya E, Aydin AT. Popliteal entrapment syndrome. A systematic review of the literature and case presentation. Muscles Ligaments Tendons J. 2014 Jul 14;4(2):141-8. PMID: 25332925; PMCID: PMC4187583.
- <https://www.sportsinjurybulletin.com/anatomy/popliteal-artery-entrapment-a-mysterious-syndrome>