ACC.24

Exercise treatment for PAD: Case presentation

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Exercise Programs for Intermittent Claudication in PAD
Supervised exercise programs

Benefits:

- **For supervised exercise programs, randomized data suggests:**
  - Supervised exercise (SE) can improve pain free walking and maximal walking distance.
  - SE is as effective as revascularization in improving long term walking ability.

Obstacles for supervised exercise programs:

- Limited program accessibility.
- Low referral rates.
- Low enrollment and adherence due to:
  - Inconvenience.
  - Lack of motivation.
- Insurance reimbursements.

2016 AHA/ACC Guideline on the Management of Patients With Lower Extremity PAD

Recommendations for Structured Exercise Therapy

COR	LOE	Recommendations
I	A	In patients with claudication, a supervised exercise program is recommended to improve functional status and QoL and to reduce leg symptoms.[24–26,28–34,36,169,170]
I	B-R	A supervised exercise program should be discussed as a treatment option for claudication before possible revascularization.[24–26]
IIa	A	In patients with PAD, a structured community- or home-based exercise program with behavioral change techniques can be beneficial to improve walking ability and functional status.[37,80,86,171]
IIa	A	In patients with claudication, alternative strategies of exercise therapy, including upper-body ergometry, cycling, and pain-free or low-intensity walking that avoids moderate-to-maximum claudication while walking, can be beneficial to improve walking ability and functional status.[27,173,175,176]

Gerhard-Herman 2016

Lane R, Harwood A,Watson L, Leng GC. Exercise for intermittent claudication. *Cochrane Database Syst Rev*. 2017;12(12):CD000990

Pandey A, Banerjee S, Ngo C, et al. Comparative efficacy of endovascular revascularization versus supervised exercise training in patients with intermittent claudication: meta-analysis of randomized controlled trials. *JACC Cardiovasc Interv*. 2017;10(7):712-724

Polonsky TS, McDermott MM. Lower Extremity PAD Without CLTI: A Review. JAMA 2021;325:2188-2198.

Exercise Programs for Intermittent Claudication in PAD
Home-Based Exercise Interventions

- **Effective home-based exercise interventions** can potentially promote long term behavioral change and overcome barriers to optimal utilization of supervised exercise programs.

- **Randomized trials of home-based exercise have been heterogeneous.**
  - High intensity, monitored exercise with behavioral change intervention was shown to improve 6-minute walk distance

Polonsky TS, McDermott MM. Lower Extremity PAD Without CLTI: A Review. JAMA 2021;325:2188-2198.
McDermott MM, Spring B, Tian L et al. Effect of Low-Intensity vs High-Intensity Home-Based Walking Exercise on Walk Distance in Patients With Peripheral Artery Disease: The LITE Randomized Clinical Trial. JAMA 2021;325:1266-1276.

Case 1 -

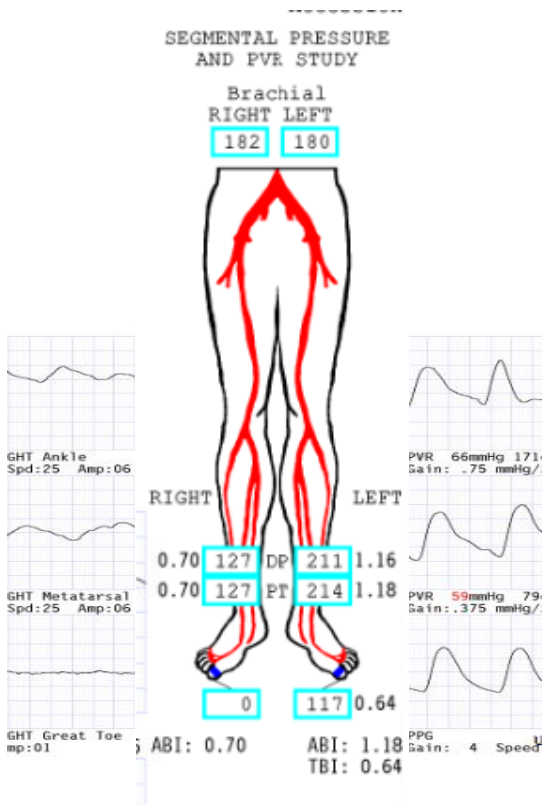
73-year-old female, with history of CAD and hyperlipidemia presents in 2022 with **right calf pain** at ~400ft.

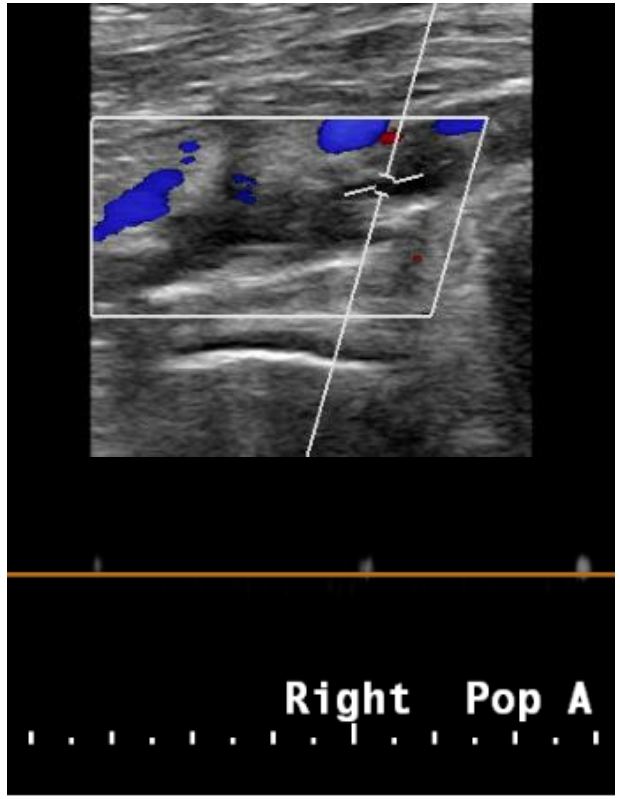
- No manifestation of CLTI.
- LDL 77 mg/dl , HbA1C 6%, BP controlled
- Medications: Aspirin, statin.
- Social history: Widowed, retired, lives in Denver, non-smoker.

Recommendations:

Risk factor modification

Supervised exercise program.





ABI R - 0.7 L – 1.1
TBI R - NA L – 0.64

LE Duplex
Mid popliteal occlusion

Case 2

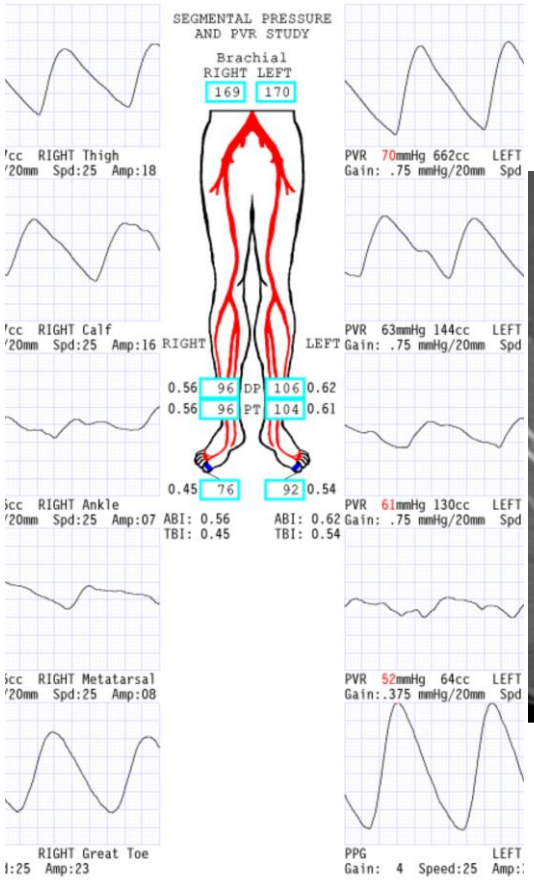
62-year-old male with history of AS (s/p AVR), HTN, HLD, COPD and PAD s/p L iliac stent presented in 2012 with **bilateral leg pain at 100 ft when going uphill. Lifestyle limiting.**

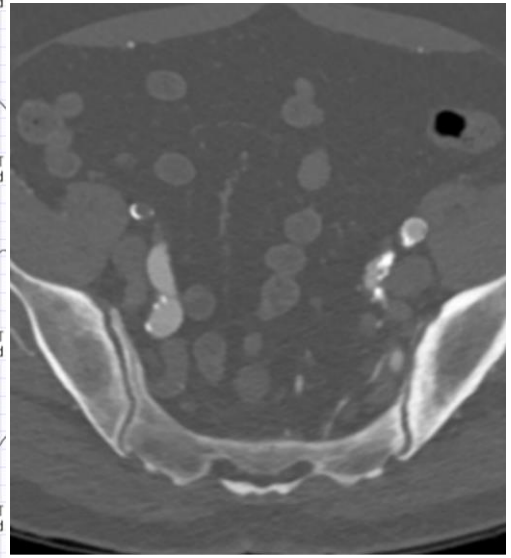
- No manifestation of CLTI.
- Blood pressure controlled, LDL 98.
- Medications: aspirin, statin, BP medications.
- Social history: Married, former construction worker, lives in Denver, Smoking.

Recommendations:

Risk factor modification

Exercise program – The patient opted for home-based walking exercise.





ABI R – 0.5 L – 0.6
TBI R – 0.4 L – 0.5

CTA: REIA occlusion
Bilateral SFA occlusion

Follow up

	Presentation	Exercise program	Follow up
Case 1	**73-year-old F with right leg claudication** Short popliteal occlusion	**Supervised Exercise program** 3 weekly session of 60 minutes exercise	**3 Months later** Doubled walking capacity Symptoms are not lifestyle limiting
Case 2	**62-year-old M with bilateral claudication** Right external iliac occlusion and bilateral SFA occlusion	**Home Walking Exercise** Daily 40-50 minutes walking	**1-12 years later** Improved walking distance and uphill walking. Symptoms are no longer lifestyle limiting Stopped smoking

Exercise and PAD cases - Summary

- 2 examples of improved walking capacity with supervised exercise/home base exercise therapy for PAD.

- Although recommended for intermittent claudication in PAD, exercise therapy is underutilized.
- Barriers to address:
  - Improving accessibility of supervised exercise programs.
  - Optimization of home-based exercise interventions and monitoring.
  - Improving evidence-based data and consistency between different home-based exercise programs.
  - Improving integration and implementation of exercise therapy in PAD management.

1. Treat-Jacobson D, McDermott MM, et al. Optimal Exercise Programs for Patients With PAD: A Scientific Statement From the AHA. Circulation 2019;139:e10-e33.
2. Wu FQ et al, The Role of Supervised Exercise Therapy in the Management of Symptomatic PAD with Intermittent Claudication. *Current Treatment Options in Cardiovascular Medicine*. 2023;25(10):501-513.
3. Mazzolai L, Belch J, Venermo M et al. Exercise Therapy for Chronic Symptomatic PAD: A Clinical Consensus Document of the European Society of Cardiology Working Group on Aorta and Peripheral Vascular Diseases in Collaboration With the European Society of Vascular Medicine and the European Society for Vascular Surgery. Eur J Vasc Endovasc Surg 2024.

Thank you