

**Atlas of  
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# Peripheral Artery Disease

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## BRIEF CASE PRESENTATION

A 74-year-old man presents with a chief complaint of limb discomfort with exercise which resolves with rest.

## CHARACTERISTICS

- Peripheral artery disease (PAD) is a common manifestation of systemic atherosclerosis
- Patients with PAD present in myriad ways. They may have no symptoms, report muscular pain with ambulation, claudication, or present with critical limb ischemia. Critical limb ischemia is represented by pain at rest, a non-healing ulcer or gangrene
- The diagnosis is made through history, careful physical examination of the lower extremities, pulse evaluation and performance of the ankle-brachial index (ABI). An ABI less than 0.91 is diagnostic of PAD
- Several other non-invasive tests are used for the diagnosis of PAD including exercise stress testing, segmental blood pressure, and pulse volume detection. Duplex ultrasonography can be utilized to pinpoint the specific morphology of the vascular lesion
- Pulse volume recordings (PVR) are especially useful in diabetic patients with non-compressible arteries as it is less effected by medial calcinosis than segmental blood pressure recordings
- Patients with PAD have a similar risk of myocardial infarction and stroke as patients with coronary heart disease, yet PAD patients are typically less intensively treated with anti-platelet therapy and risk reduction than patients with coronary disease

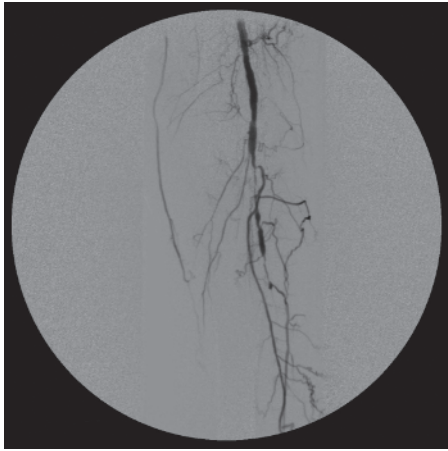
## TREATMENT

Cardiovascular risk reduction therapies including tobacco cessation, blood pressure control, cholesterol management, tight glycemic control and aspirin therapy are all indicated to reduce myocardial infarction, stroke, and death. Management of intermittent claudication include risk factor intervention and a supervised exercise walking program. Revascularization is considered when medical management and maximal exercise therapy have failed to improve the patients physical functioning. In the setting of critical limb ischemia, lower extremity revascularization may be required to avoid amputation

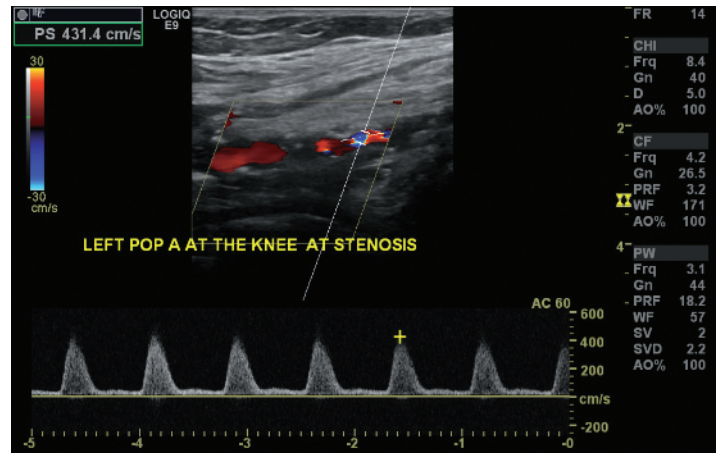
## REFERENCES

- Rooke TW, Hirsch AT, Misra S, et al. ACCF/AHA 2005 Focused Update of the Guideline for the management of patients with peripheral artery disease (updating the 2005 guideline). *J Am Coll Cardiol.* 2011; 58:19.
- Hirsch AT, Criqui MH, Treat-Jacobson D, et al. Peripheral arterial disease detection, awareness, and treatment in primary care. *JAMA.* 2001; 286(11):1317–24.
- Diehm C, Allenberg JR, Pittrow D, et al. Mortality and vascular morbidity in older adults with asymptomatic versus symptomatic peripheral artery disease. *Circulation.* 2009; 120:2053–61.

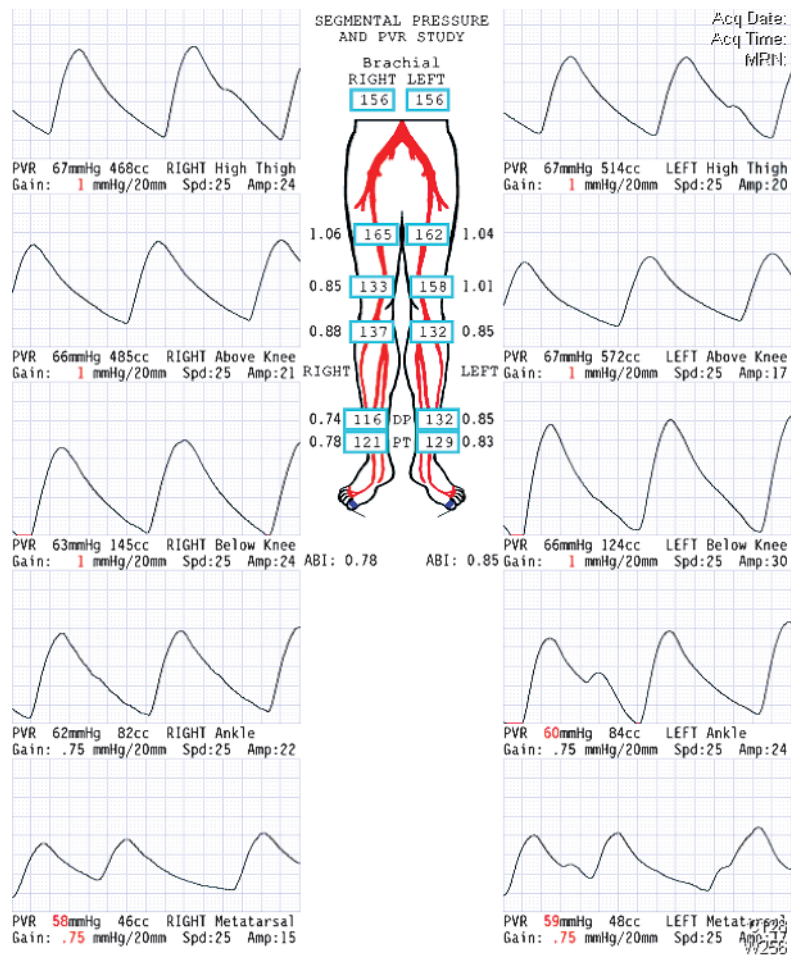
(a)



(b)



(c)



Peripheral Artery Disease Imaging. (a) Angiography of atherosclerotic popliteal artery stenosis. (b) Duplex ultrasonography of popliteal artery stenosis. (c) Pulse volume recordings demonstrating bilateral superficial femoral artery and popliteal artery stenoses.